

January 13, 2006

Mr. Noman Chowdhury  
California Regional Water Quality Control Board  
Los Angeles Region  
320 West 4<sup>th</sup> Street, Suite 200  
Los Angeles, California 90013

**Subject:** **Quarterly Site Conceptual Model Update for the Fourth Quarter 2005**  
Mobil Station 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California  
CRWQCB Case No. 908050452A

Mr. Chowdhury:

At the request of ExxonMobil Oil Corporation (ExxonMobil), Environmental Resolutions, Inc. is submitting the Fourth Quarter 2005 ExxonMobil Quarterly Groundwater Monitoring and Status Report for the above-referenced site. The format utilized for the report consolidates groundwater sampling (where applicable), Title 23, Subchapter 16 reporting and consultant progress updates for ExxonMobil into one summary report.

Please call me at (949) 457-8954 if you have any questions.

Sincerely,  
Environmental Resolutions, Inc.

*George E. Salley*  
George E. Salley  
Senior Project Geologist  
P.G. 6308

Cc: Ms. Marla D. Guensler, ExxonMobil  
Ms. Carmen Piro, Long Beach Department of Health and Human Services

3163  
EXNQTRLY  
Date: January 13, 2006

**EXXONMOBIL OIL CORPORATION (EXXONMOBIL)  
SITE CONCEPTUAL MODEL UPDATE**

Site Status: Active Mobil Station

Station Number: 18MLJ Address:

ExxonMobil Environmental Engineer:

Consulting Company/Contact Person:

Primary Agency:

5005 North Long Beach Boulevard, Long Beach, CA

Mr. Gene N. Ortega

Environmental Resolutions, Inc. (ERI)/George E. Salley

Mr. Noman Chowdhury, California Regional Water Quality

Control Board - Los Angeles Region (CRWQCB)

320 West 4<sup>th</sup> Street, Suite 200, Los Angeles, CA 90013

Ms. Carmen Piro

Long Beach Department of Health and Human Services

2525 Grand Avenue, Long Beach, CA 90815

Other Agencies to Receive Copies:

**WORK PERFORMED THIS QUARTER [Fourth - 2005]:**

- o 10/14/05 – ExxonMobil submitted a final remedial action plan (RAP) to the CRWQCB. The RAP contained the results from the air sparging/soil vapor extraction (AS/SVE) feasibility test conducted at the site in July 2005.
- o 10/15/05 – Submitted the quarterly report for the third quarter 2005.
- o 10/26/05 – Performed quarterly purge groundwater monitoring and sampling. Properly recycled purge water at Crosby & Overton of Long Beach, California, under a non-hazardous waste manifest (attached).

**WORK PROPOSED FOR NEXT QUARTER [First - 2006]:**

- o Perform quarterly purge groundwater monitoring and sampling.
- o Submit a quarterly report.
- o Obtain approval from the CRWQCB to proceed with the remediation technique proposed in the RAP.

Current Phase of Project:

Monitoring and sampling / Remediation

Frequency of Monitoring and Sampling:

Quarterly

Is LPH Present on Site:

No

Cumulative LPH Recovered to Date:

None

Water Wells or Surface Waters within 1000'

& Their Respective Directions:

None

Permits for Discharge:

NA

Current Remediation Techniques:

Pending construction of AS/SVE remediation system

Depth to Groundwater:

27 to 28 feet bgs – measured on 10/26/05

## SITE CONCEPTUAL MODEL UPDATE

The preliminary site conceptual model (PSCM) for this case was prepared by ExxonMobil and submitted to the CRWQCB on September 13, 2005. The following sections provide an update to the PSCM based on the most recent data obtained at the site.

### SITE DESCRIPTION

The subject site is an active Mobil service station which sells Mobil-branded gasoline, located at the northwestern corner of North Long Beach Boulevard and Del Amo Boulevard in Long Beach, California (Site Location Map, Plate 1). The site facilities consist of a service station building containing a Mobil Mart food store. The fueling system consists of three unleaded-gasoline underground storage tanks (USTs), one diesel UST, seven fuel dispensers (six gasoline and one diesel), and the associated product piping. The locations of the fueling system components, as well as the locations of soil borings, groundwater monitoring wells, and other relevant site features, are shown on the Generalized Site Plan (Plate 2).

The area surrounding the site consists of commercial businesses, apartments and residential housing. A Chevron service station is located south of the site across Del Amo Boulevard. A Shell service station is located on the southeastern corner. A 7-Eleven food store and a McDonald's restaurant are located on the northeastern corner of the intersection. The vacant lot directly north of the site is being currently developed as an elementary school. The area surrounding the site is shown on the Aerial Photo Map (Plate 3).

### BACKGROUND

The following is a brief description of the previous work conducted at the site. For detailed information, refer to the reports listed in the reference section of this site conceptual model update (SCMU). The locations of the soil borings, groundwater monitoring wells, and remediation wells drilled and installed during the previous work at the site plus other relevant site features are shown on Plate 2. The analytical results from soil sampling conducted during previous investigations are presented in Table 1. Groundwater monitoring and sampling data for the third quarter 2005 is summarized in Table 2. The cumulative water level measurements and groundwater analytical results are presented in Table 3.

#### Subsurface Investigations

In August 1989, American Environmental Management Corporation (AEM) conducted a site assessment that consisted of drilling and sampling six soil borings, and completing three of the soil borings as groundwater monitoring wells (AEM, 1989). The results of this investigation prompted the City of Long Beach Department of Health and Human Services (LBDHHS) to transfer the case to the CRWQCB for further review and oversight. The case was transferred on October 4, 1989, and the CRWQCB issued case file No. 908050452 to this site. Subsequent to the transfer of this case to the CRWQCB, additional site assessment and remedial testing activities were performed at the site which resulted in the installation of nine groundwater monitoring wells (five on site and four off site), three on-site air sparge wells and two on-site vapor extraction wells. Quarterly groundwater monitoring was conducted at the site from first quarter 1993 through second quarter 1996 (TRAK Environmental Group, 1996). During this time period, depth to groundwater ranged from approximately 27 to 36 feet bgs, and the groundwater flow direction was consistently toward the southwest. On July 23, 1996, the CRWQCB issued an Underground Storage Tank Case Closure Letter, and required that all wells be properly destroyed. On November 11, 1996, Remedial Management Corporation (RMC) submitted a well abandonment report stating that all of the wells (on site and off site) had been abandoned by pressure grouting (RMC, 1996).

In January 2001, H.B. Covey of Pomona, California, conducted a fueling system upgrade at the site. The upgrade consisted of removing and replacing the fuel dispensers and related product piping. FREY Environmental, Inc. (FREY) of Newport Beach, California, performed soil sampling activities in conjunction with the fueling system upgrade. FREY personnel collected soil samples from six locations

adjacent to the fuel dispensers and from one location adjacent to the product piping. Methyl tertiary butyl ether (MTBE) in soil was measured at a maximum concentration of 50 milligrams per kilogram. (FREY, 2001)

ExxonMobil transferred environmental consulting responsibilities for this site to ERI in October 2002. In subsequent case reviews between ExxonMobil and ERI, a decision was made to assess the condition of soil and groundwater beneath the site. This decision was based on the concentrations of fuel oxygenates in soil detected during the aforementioned fueling system upgrade, and the juxtaposition of sensitive receptors in the area. In February 2003, ExxonMobil submitted a work plan for the installation of three groundwater monitoring wells at the site.

In April 2003, ERI conducted an initial site assessment which consisted of drilling and sampling soil borings B1 through B3. Borings B1 and B2 were each completed as a groundwater monitoring wells MW1 and MW2, respectively. Boring B3 was completed as dual-completion groundwater monitoring/soil vapor extraction well MW3. During this investigation, groundwater was first encountered at approximately 30 feet bgs. The data presented in this report resulted in the LBDHHS transferring the case to the CRWQCB for further review and oversight. (ERI, 2003)

In October 2004, ERI conducted an additional site assessment which consisted of drilling and sampling off-site soil borings B4 through B6. The borings were completed as groundwater monitoring wells MW4 through MW6, respectively. The purpose of this investigation was to provide off-site delineation of fuel constituent concentrations in soil and groundwater. (ERI, 2004)

In March 2005, ERI drilled and sampled on-site boring B7 which was completed as groundwater monitoring well MW7. This well was installed to provide upgradient delineation in the northeastern portion of the site. (ERI, April 14, 2005)

In March 2005, ExxonMobil submitted an interim remedial action plan (IRAP) to the CRWQCB for an AS/SVE feasibility study at the site. The CRWQCB submitted a letter to ExxonMobil dated May 9, 2005 granting approval of the IRAP. In response to the approval, ERI drilled and installed remediation wells AS/SVE1 through AS/SVE4 in May 2005. The details of the interim remedial action were reported in the final RAP dated October 14, 2005.

### **Remediation**

According to FREY, approximately 75 tons of hydrocarbon affected soil was generated during the aforementioned January 2001 fueling system upgrade project. The soil was removed from the site and transported for recycling to TPS Technologies, Inc.'s approved facility in Adelanto, California.

Since quarterly groundwater monitoring and sampling began in the second quarter 2003, a total of approximately 2,007 gallons of groundwater has been purged from the site wells. The purge water was transported to Crosby & Overton's (C&O) permitted facility in Long Beach, California, for recycling.

### **Quarterly Monitoring**

Quarterly groundwater monitoring and sampling has been conducted at the site since the second quarter 2003. During that time, the average depth to groundwater at the site has been approximately 29 feet bgs, and groundwater flow direction has been toward the southwest. The most recent quarterly groundwater monitoring and sampling event took place on October 26, 2005. Compared to the average groundwater depth for the site, the depth to groundwater has decreased by approximately 2 feet. The maximum concentrations of benzene, total petroleum hydrocarbons as gasoline (TPHg), tertiary butyl alcohol (TBA), and MTBE were detected in well MW2 at concentrations of 71.5 micrograms per liter ( $\mu\text{g/l}$ ), 5,980  $\mu\text{g/l}$ , 865  $\mu\text{g/l}$  and 2,070  $\mu\text{g/l}$ , respectively.

Groundwater gauging data for the fourth quarter 2005 is shown on the Groundwater Elevation Contour Map – 10/26/05 (Plate 4). Groundwater sampling data for benzene, TPHg, MTBE and TBA for the fourth quarter 2005 are shown on the isopleth concentration maps (Plates 5 through 8, respectively).

## SENSITIVE RECEPTOR SURVEY

Sensitive receptors include water supply wells, schools, hospitals and surface water bodies within a 1-mile radius of the site. ERI performed a search to identify any water supply wells, schools, hospitals and surface water bodies within the sensitive receptor survey area. Each receptor identified by this survey is depicted on the Sensitive Receptor Map (Plate 9).

The closest water supply wells to the site are wells 905L and 906B, located approximately 2,170 feet southwest and 2,270 feet south of the site, respectively. A new elementary school is currently being constructed directly adjacent to the northern property line of the site, and the closest surface water body is the Los Angeles River which is located approximately 0.4 miles west of the site.

## PLUME TRAVEL TIME ESTIMATE

The original plume travel time estimate (PTTE) was prepared by ERI using the CRWQCB's Non-Steady State Spreadsheet Analytical Model to evaluate the travel time for MTBE to reach the closest sensitive receptor to the site, and was submitted to the CRWQCB on September 13, 2005. As stated, the closest sensitive receptor is active production well 905L, located approximately 2,170 feet southwest of the site. This well is also designated as California State Well No. 4S13W12E01. The screened interval for the production well is reported to be from 360.5 feet bgs to 375.5 feet bgs. The location of the production well places it in line with the groundwater flow direction exhibited for this site. On-site well MW2 and off-site well MW5 generally fit the CRWQCB's modeling criteria that MTBE concentrations increase then decrease over time.

ERI used reasonable value ranges for groundwater velocity and dispersivity, based on site information, to match the concentration curves in wells MW2 and MW5. Based on the ranges of values for these parameters, and the conservative assumption that the drinking water well (point of exposure) is directly downgradient, the model predicts that an MTBE concentration of 5 micrograms per liter would occur at the aforementioned drinking water well in 91.3 years. Please note that the CRWQCB model is predicated on the assumption that the data truly denote a peak, that the peaks are not due to other groundwater dynamics (such as elevation changes), and that the two peaks modeled are from the same instantaneous release. Given that there are only three data points for monitoring well MW5, not all of these assumptions may be correct for this site.

It is ERI's opinion that no atypical site-specific conditions, with regard to transport, exist and that the site conditions pose little risk to the aforementioned point of exposure. It is also ERI's opinion that this model does not allow for a unique solution to the fuel constituent transport question. The model does not take into account the presence of aquitards between the shallow affected groundwater and the aquifers from which the supply well is pumping. Also, the model does not allow for the effects of natural attenuation (except dispersion) during transport. These two criteria would act to increase the time it would take for MTBE to reach the supply well, and would diminish the concentration of MTBE that finally reached the well (if any). In accordance with the CRWQCB requirements, the data contained in the model will be updated annually (during the second quarter), or as necessary based on changes in site conditions.

## CONCLUSIONS

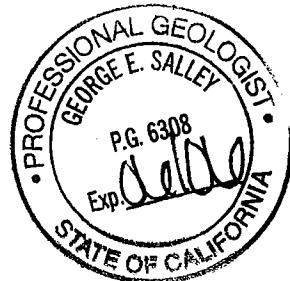
The site conceptual model for Mobil Station 18MLJ is that of a two-release scenario. This consists of an older release of fuel constituents that does not contain fuel oxygenates and a separate newer release that does contain fuel oxygenates. The old release is believed to have occurred prior to the case closure granted in 1996. The more recent release contains concentrations of fuel oxygenates originally prevalent in shallow soil at the site. Based on the quarterly groundwater sampling results to date, the fuel oxygenates detected in the shallow soil are now affecting the groundwater bearing zone.

Please call Mr. George E. Salley at (949) 457-8954 for any questions regarding this report.

Respectfully Submitted,  
Environmental Resolutions, Inc.

*George E. Salley*

George E. Salley  
Senior Project Geologist  
P.G. 6308



**ATTACHED:**

- o Site Location Map (Plate 1)
- o Generalized Site Plan (Plate 2)
- o Aerial Photo Map (Plate 3)
- o Groundwater Elevation Contour Map – 10/26/05 (Plate 4)
- o Benzene Groundwater Isopleth Concentration Map – 10/26/05 (Plate 5)
- o TPHg Groundwater Isopleth Concentration Map – 10/26/05 (Plate 6)
- o MTBE Groundwater Isopleth Concentration Map – 10/26/05 (Plate 7)
- o TBA Groundwater Isopleth Concentration Map – 10/26/05 (Plate 8)
- o Sensitive Receptor Map (Plate 9)
- o Cumulative Soil Analytical Results (Table 1)
- o Water Level Measurements and Groundwater Analyses (Table 2)
- o Cumulative Water Level Measurements and Groundwater Analyses (Table 3)
- o Non-Steady State Transport Model Spreadsheet
- o Laboratory Report and Chain-of-Custody Record
- o Purging and Sampling Records
- o Purging and Sampling Protocol

## **REFERENCES**

American Environmental Management, August 1989, Site Assessment, Mobil Station, 5005 Long Beach Boulevard, Long Beach, California.

California Department of Water Resources, June 1961 (reprinted May 1990), Bulletin Number 104, Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A, Ground Water Geology.

California Regional Water Quality Control Board – Los Angeles Region, July 23, 1996, Underground Storage Tank Case Closure, Mobil Service Station 18-MLJ, 5005 Long Beach Boulevard, Long Beach.

Environmental Resolutions, Inc., June 9, 2003, Letter Report for the Installation of Three Groundwater Monitoring Wells at Mobil Station 18-MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

Environmental Resolutions, Inc., December 23, 2004, Groundwater Monitoring Well Installation Report, Mobil Station 18MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

Environmental Resolutions, Inc., April 14, 2005, Groundwater Monitoring Well Installation Report, Mobil Station 18MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

Environmental Resolutions, Inc., July 15, 2005, Quarterly Report for the Second Quarter 2005, Mobil Station 18MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

Environmental Resolutions, Inc., September 13, 2005, Preliminary Site Conceptual Model, Site Characterization Report & Plume Travel Time Estimate, Mobil Station 18MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

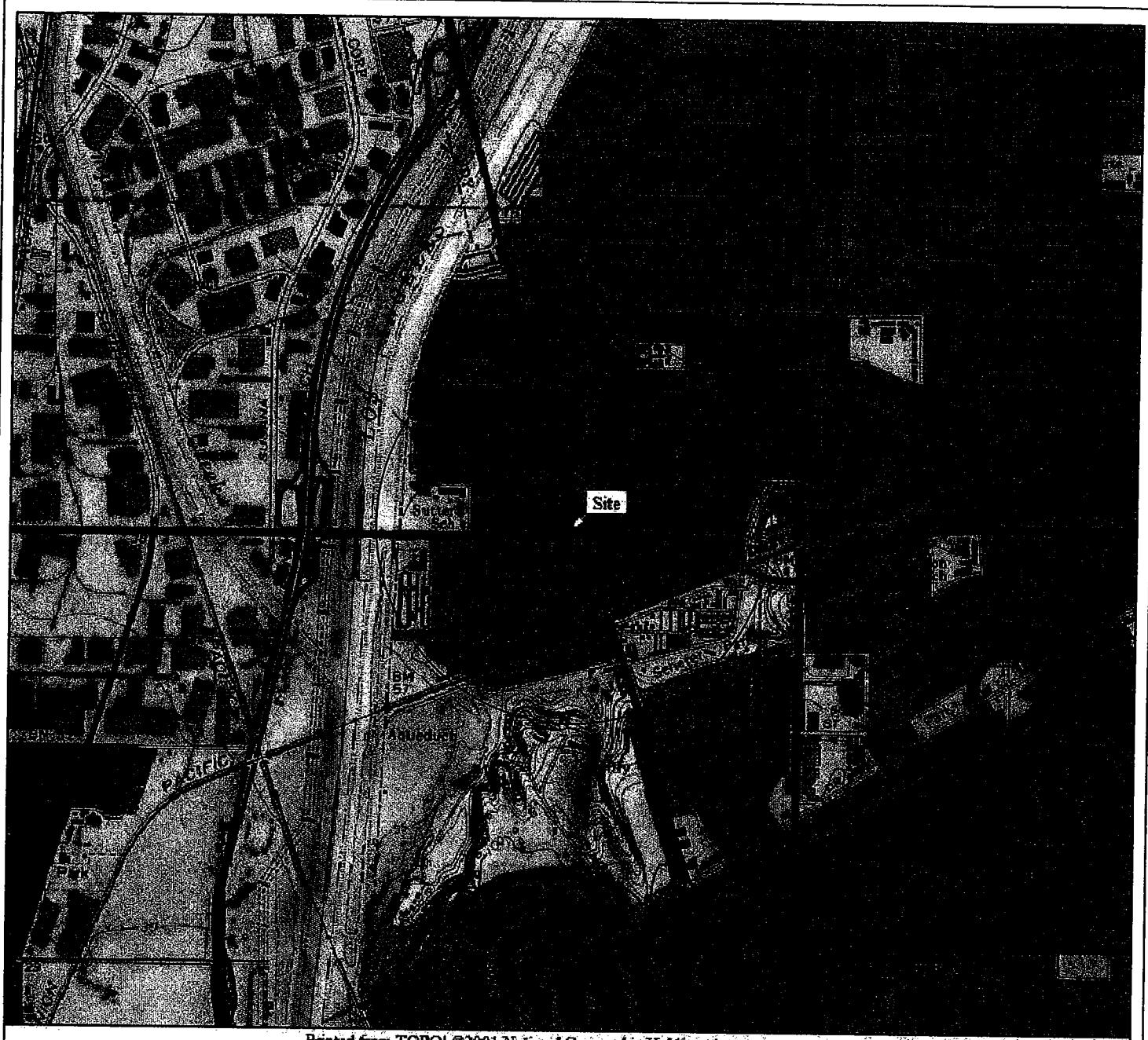
Environmental Resolutions, Inc., October 14, 2005, Remedial Action Plan, Mobil Station 18MLJ, 5005 North Long Beach Boulevard, Long Beach, California.

FREY Environmental, Inc., March 19, 2001, Fuel Dispensing Complex Soil Sampling, Mobil Service Station #18-MLJ, 5005 N. Long Beach Boulevard, Long Beach, California.

Remedial Management Corporation, November 11, 1996, Abandonment of Groundwater Monitoring, Sparge, and Vapor Extraction Wells, Mobil Station 11-MLJ, 5005 Long Beach Boulevard, Long Beach, California.

TRAK Environmental Group, Inc., July 25, 1996, Quarterly Progress Report, Second Quarter 1996, Mobil Service Station 11-MLJ, 5005 Long Beach Boulevard, Long Beach, California.

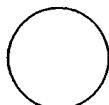
United States Geological Survey, 1964 (photorevised 1981), Long Beach, California, Quadrangle, 7.5 Minute Series Topographic Map.



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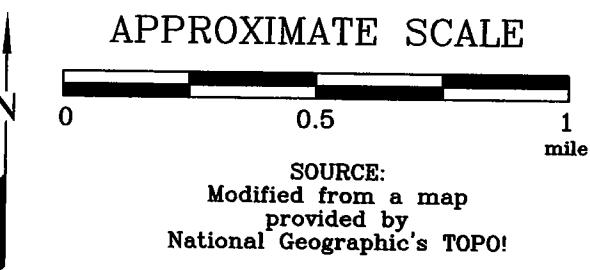
FN 3163TOPO

### EXPLANATION



1/2-mile radius circle

### APPROXIMATE SCALE

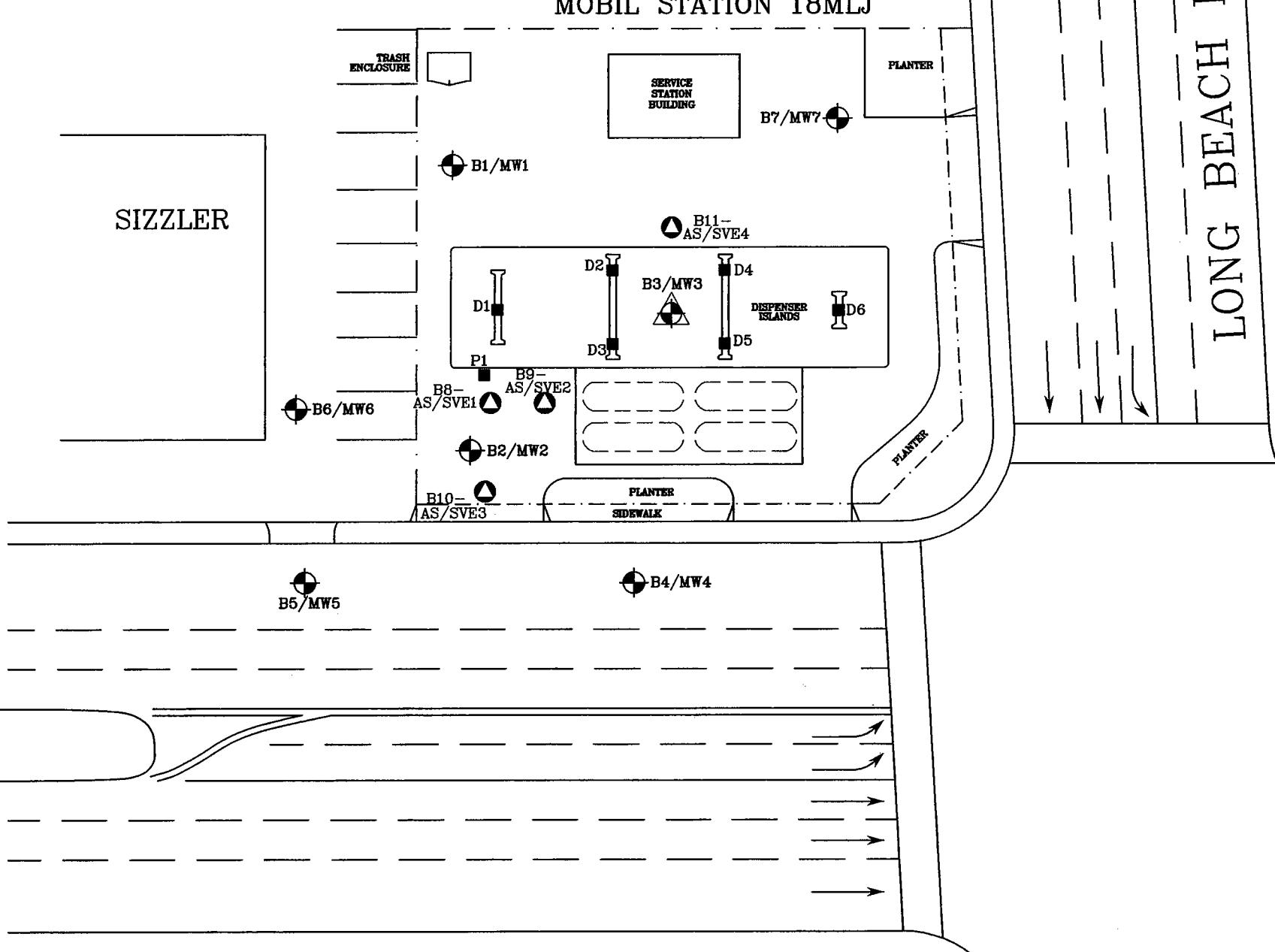


**SITE LOCATION MAP**  
MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

PROJECT NO.
3163
PLATE
1

### EXPLANATION

- B7/MW7 Groundwater monitoring well
- ▲ B3/MW3 Groundwater monitoring/vadose zone well
- B11-AS/SVE4 Air sparge/soil vapor extraction well
- D6 Soil sample location (FREY Environmental, 1991)
- (---) Underground storage tank





NOT TO SCALE

## AERIAL PHOTO MAP

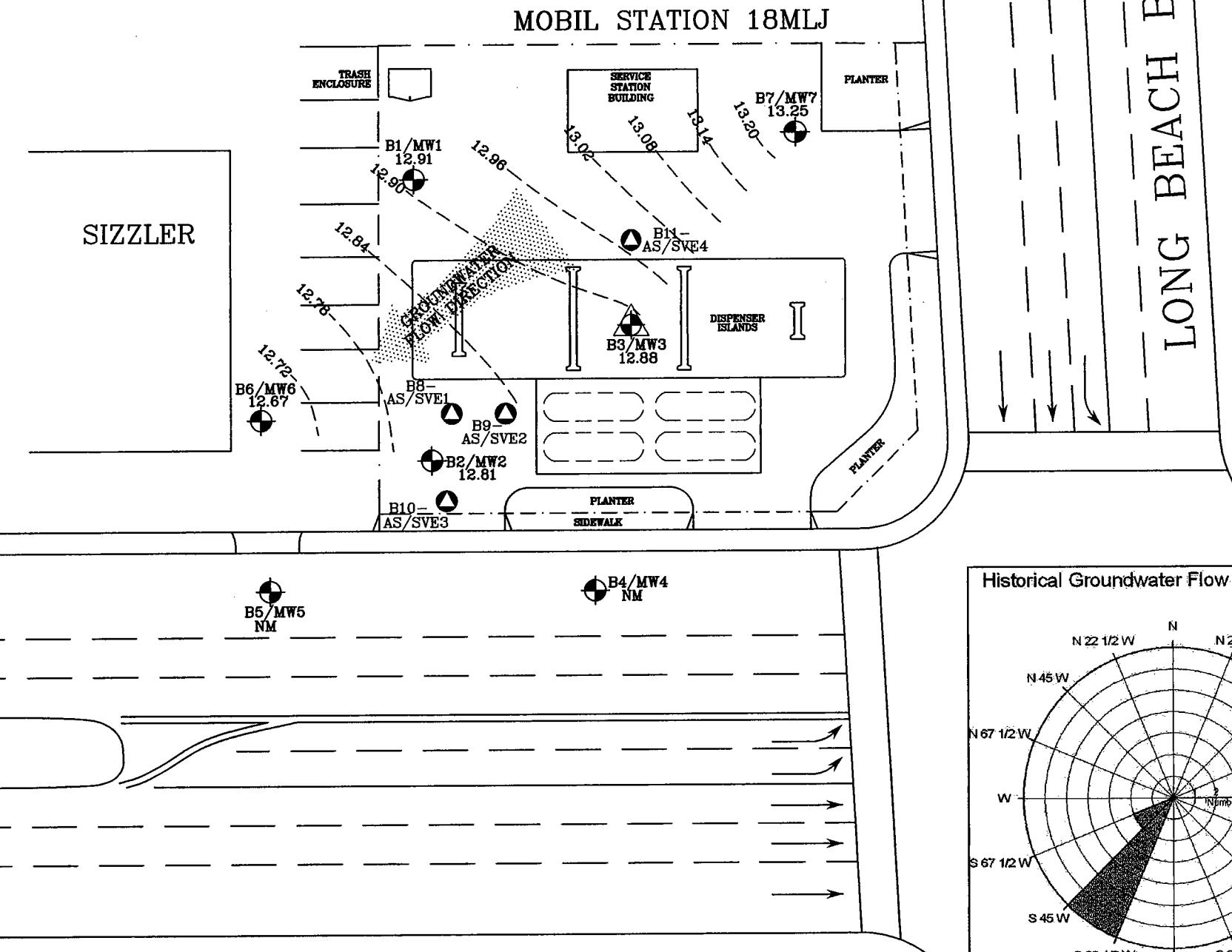
MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

FN 3163AERIEL	PROJECT NO.
	3163
ERI	PLATE
ENVIRONMENTAL RESOLUTIONS, INC.	3

DATE: 01/10/06

### EXPLANATION

- B7/MW7 Groundwater monitoring well
- ▲ B3/MW3 Groundwater monitoring/vadose zone well
- △ B11-AS/SVE4 Air sparge/soil vapor extraction well
- 13.25 Groundwater elevation (feet, relative to mean sea level)
- NM Not measured
- Line of equal groundwater elevation
- Underground storage tank

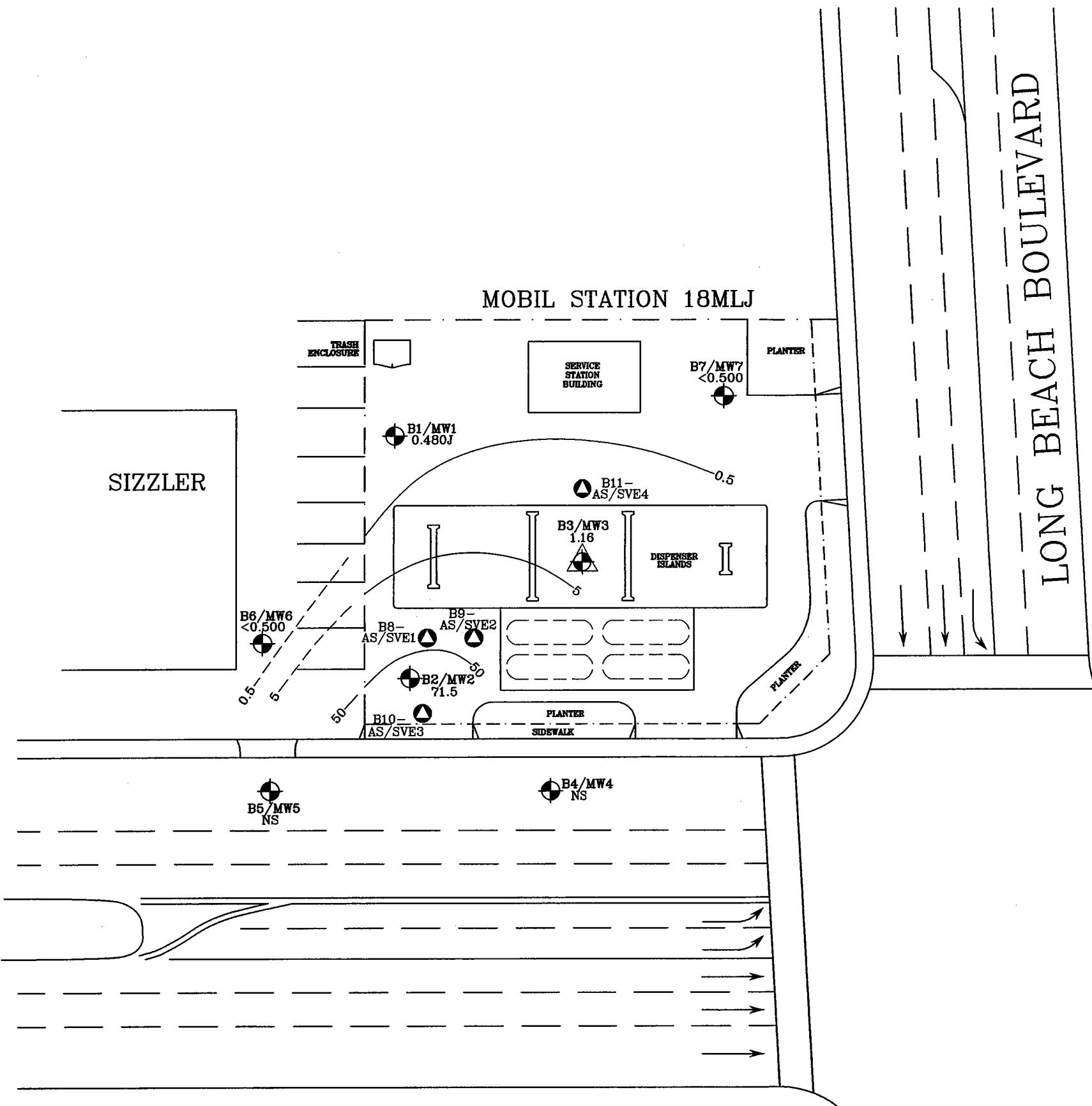


APPROXIMATE SCALE  
0 40 80 FEET

### GROUNDWATER ELEVATION CONTOUR MAP 10/26/05

MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

FN 31630004	PROJECT NO. 3163
	PLATE 4
ENVIRONMENTAL RESOLUTIONS, INC.	DATE: 01/10/06



EXPLANATION	
● B7/MW7	Groundwater monitoring well
▲ B3/MW3	Groundwater monitoring/vadose zone well
● B11- AS/SVE4	Air sparge/soil vapor extraction well
71.5	Benzene concentration in micrograms per liter
<0.500	Less than the stated laboratory reporting limit
J	Estimated value between method detection limit and practical quantitation limit
NS	Not sampled-well inaccessible
—	Line of equal benzene concentration (dashed where inferred)
( )	Underground storage tank

APPROXIMATE SCALE

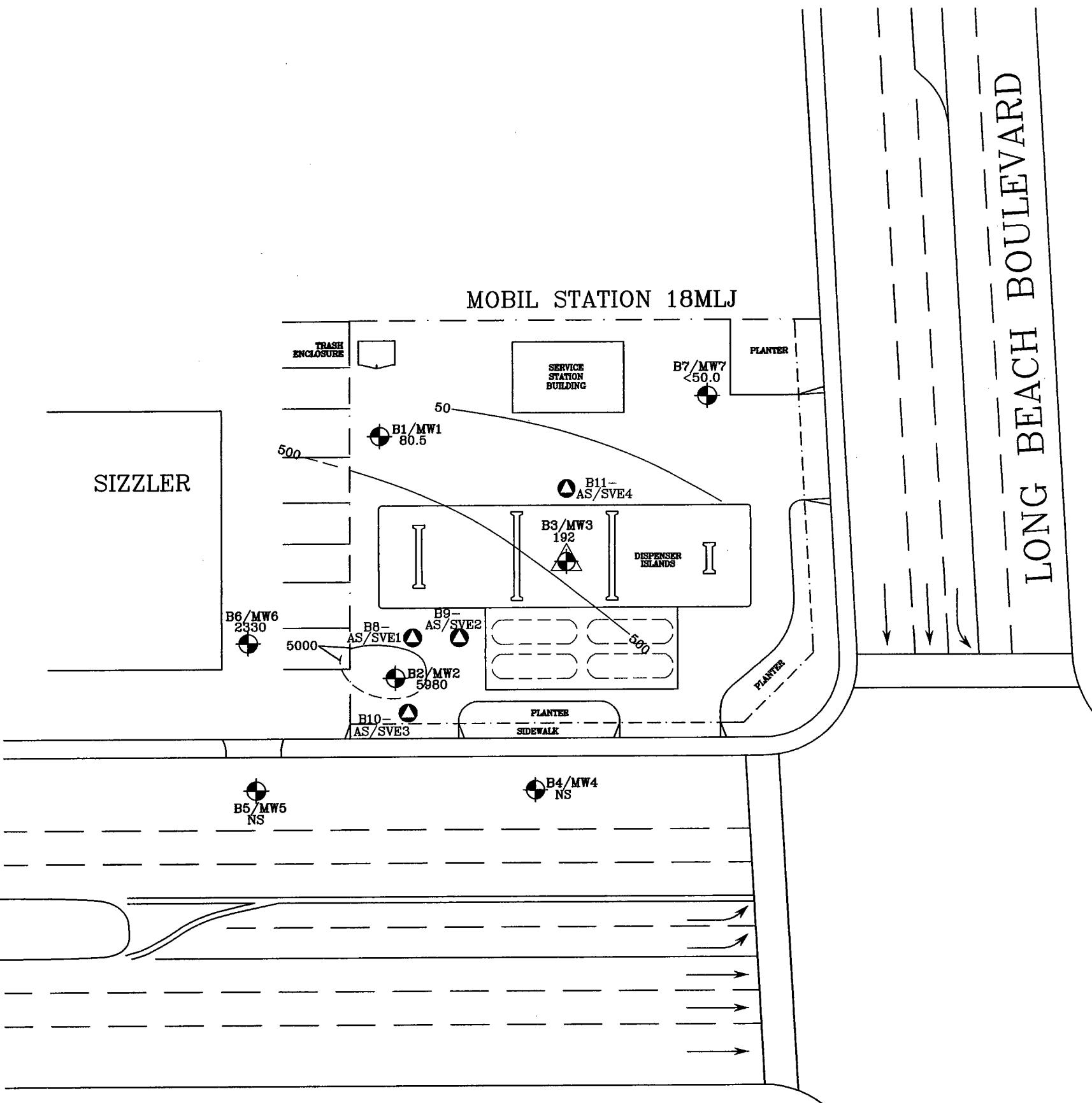
0 40 80 FEET

## BENZENE GROUNDWATER ISOPLETH CONCENTRATION MAP 10/26/05

MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

FN 3163004	PROJECT NO.
	3163
ERI	PLATE
ENVIRONMENTAL RESOLUTIONS, INC.	5

DATE: 01/10/06



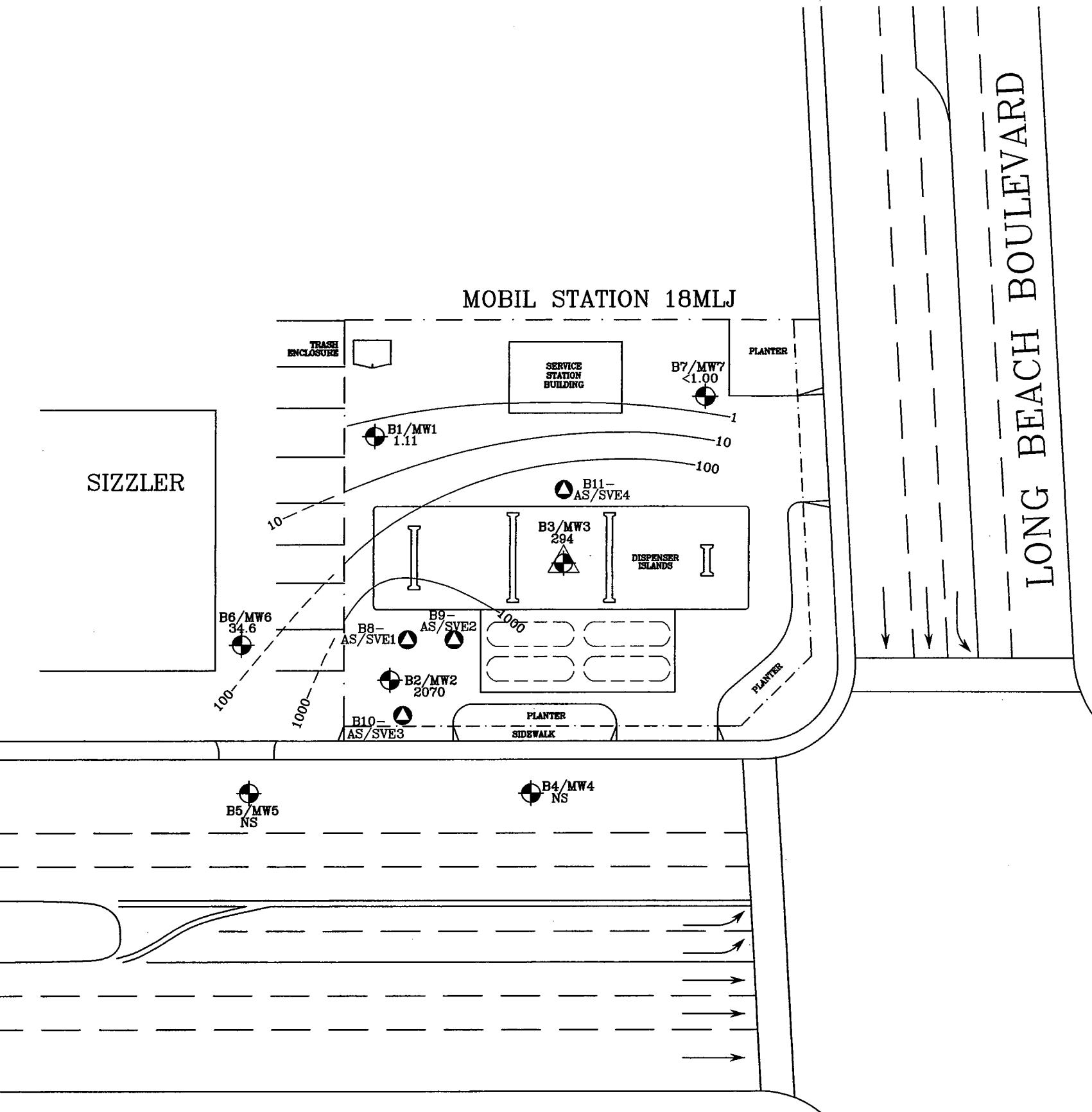
**EXPLANATION**

- B7/MW7 Groundwater monitoring well
- ▲ B3/MW3 Groundwater monitoring/vadose zone well
- △ B11-AS/SVE4 Air sparge/soil vapor extraction well
- 5980 TPHg concentration in micrograms per liter
- <50.0 Less than the stated laboratory reporting limit
- NS Not sampled—well inaccessible
- Line of equal TPHg concentration (dashed where inferred)
- (---) Underground storage tank

**TPHg GROUNDWATER ISOPILETH CONCENTRATION MAP 10/26/05**

MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

FN 31630004	PROJECT NO. 3163
	PLATE 6
DATE: 01/10/06	

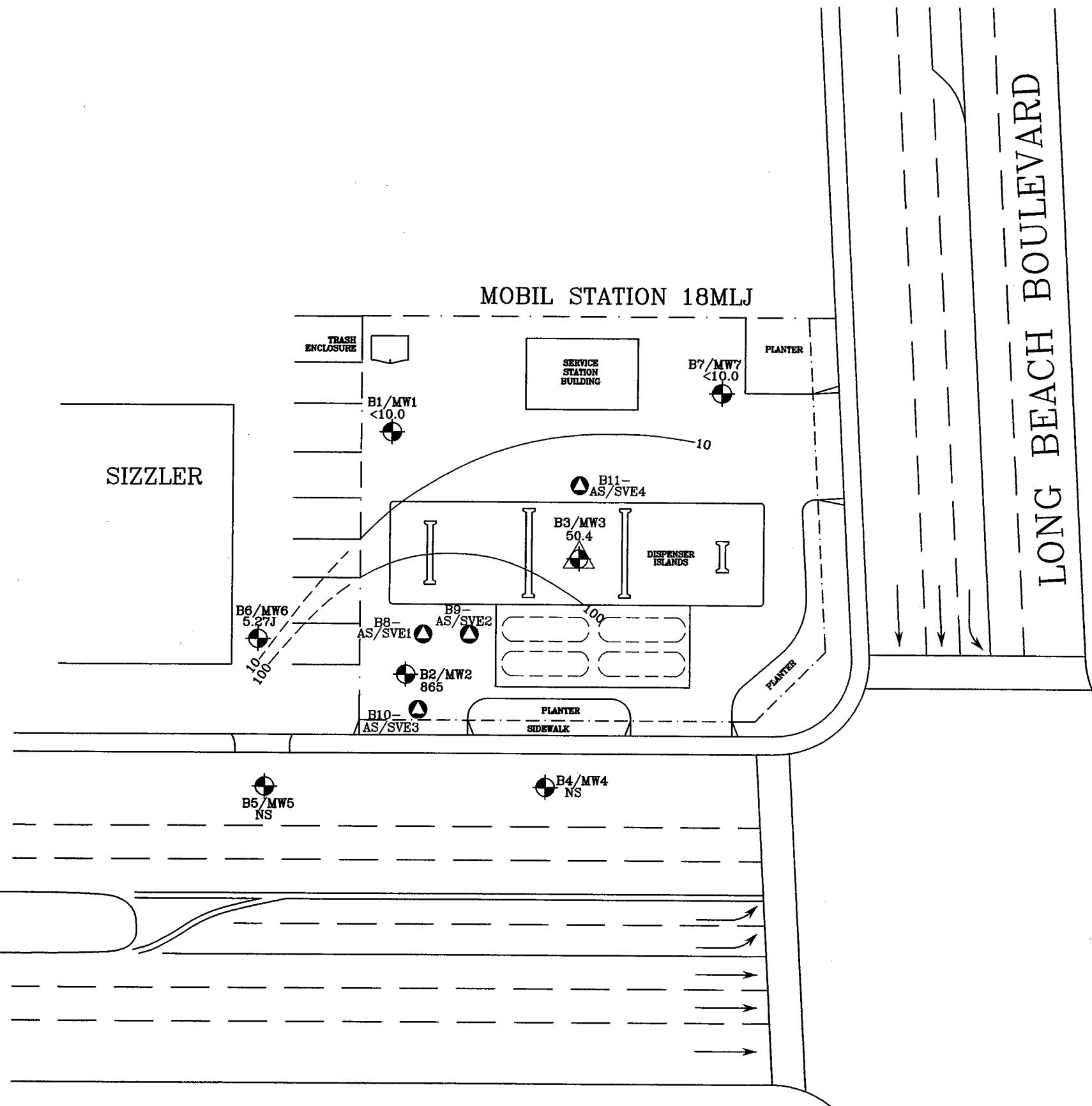


EXPLANATION	
● B7/MW7	Groundwater monitoring well
▲ B3/MW3	Groundwater monitoring/vadose zone well
● B11-AS/SVE4	Air sparge/soil vapor extraction well
2070	MTBE concentration in micrograms per liter
<1.00	Less than the stated laboratory reporting limit
NS	Not sampled-well inaccessible
—	Line of equal MTBE concentration (dashed where inferred)
(---)	Underground storage tank

## MTBE GROUNDWATER ISOPLETH CONCENTRATION MAP 10/26/05

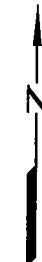
MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

FN 31630004	PROJECT NO.
3163	
PLATE	7
	DATE: 01/10/06



#### EXPLANATION

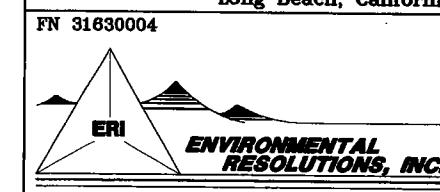
- B7/MW7 Groundwater monitoring well
- ▲ B3/MW3 Groundwater monitoring/vadose zone well
- B11-AS/SVE4 Air sparge/soil vapor extraction well
- 865 TBA concentration in micrograms per liter
- <10.0 Less than the stated laboratory reporting limit
- NS Not sampled—well inaccessible
- J Estimated value between method detection limit and practical quantitation limit
- Line of equal TBA concentration (dashed where inferred)
- (Dashed) Underground storage tank



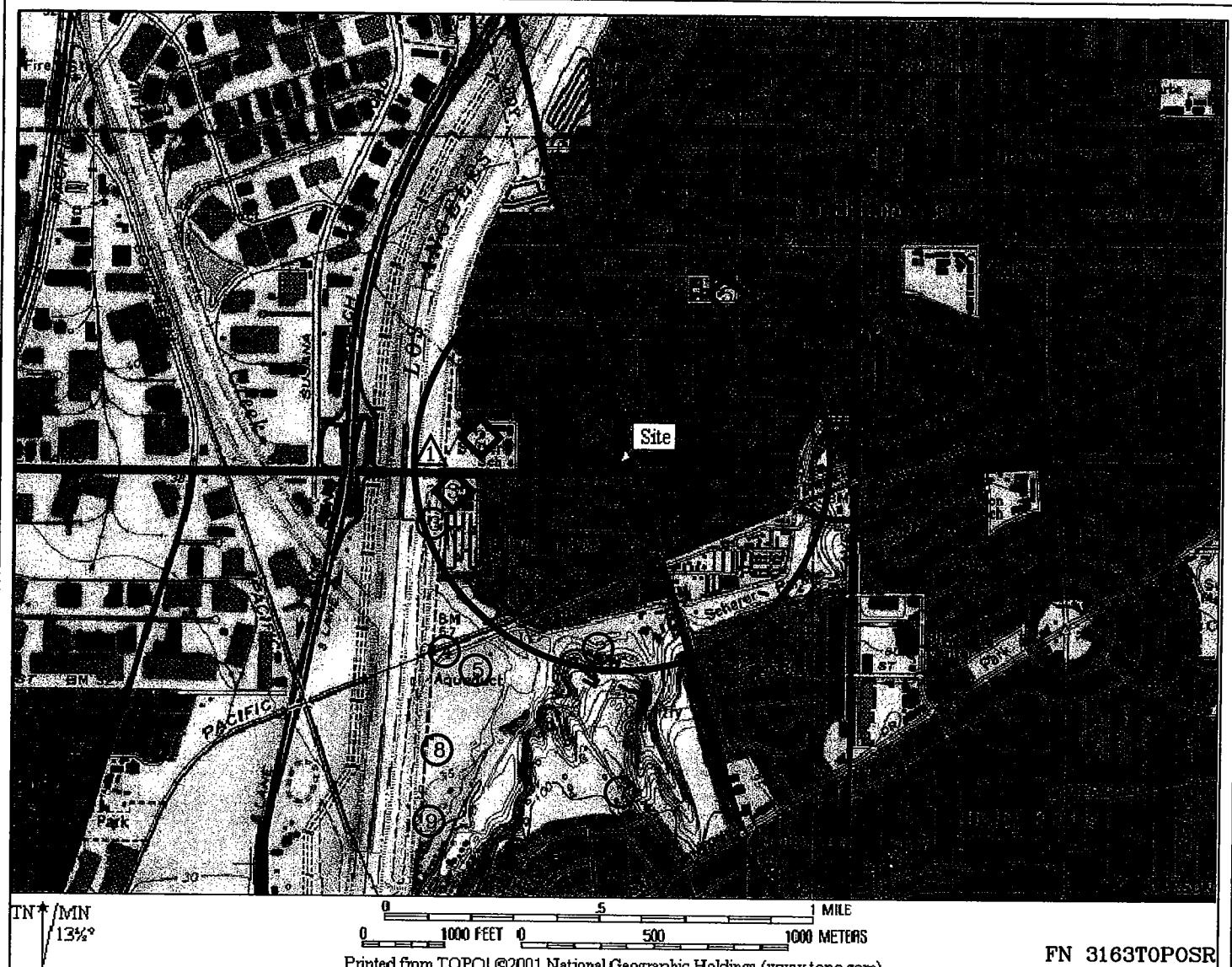
APPROXIMATE SCALE  
0 40 80 FEET

#### **TBA GROUNDWATER ISOPLETH CONCENTRATION MAP 10/26/05**

MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California



FN 31630004	PROJECT NO. 3163
PLATE 8	
DATE: 01/10/06	



<u>SENSITIVE RECEPTORS</u>			
<u>WATER WELLS</u>	<u>SCHOOLS</u>	<u>HOSPITALS</u>	<u>SURFACE WATER</u>
① 905L (2170 feet)*	① Praise Temple Academy (630 feet)	None	① Los Angeles River (2400 feet)
② 906B (2270 feet)*	② Sutter Elementary School (1580 feet)		
③ 895J (2400 feet)*	③ Long Beach Adventist School (2010 feet)		
④ 906A (2800 feet)*	④ Southwestern Longview School (2270 feet)		
⑤ 906E (2850 feet)*	⑤ Addams Elementary School (2320 feet)		
⑥ 904 (3200 feet)*			
⑦ 906D (3910 feet)*			
⑧ 896X (4200 feet)*			
⑨ 896E (4860 feet)*			

**EXPLANATION**

○ 1/2-mile radius circle

\* = Location obtained from [www.ladpw.org](http://www.ladpw.org)

School locations obtained from Microsoft Streets and Trips 2003 database.

**NOTES**  
Only schools within 1/2-mile radius of site are shown

Map Name: Long Beach, CA  
Version: 1981



**SENSITIVE RECEPTOR MAP**  
MOBIL STATION 18MLJ  
5005 North Long Beach Boulevard  
Long Beach, California

**PROJECT NO.**  
3163  
**PLATE**  
9  
DATE: 01/10/06

**TABLE 1**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Sample Number	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	MTBE	TBA	DIPE	ETBE	TAME	Ethanol	Methanol
Samples collected by FREY Environmental, Inc. on January 18 and 29, 2001. <b>Concentrations reported in mg/kg.</b>														
D1-4	4	<0.092	<0.092	<0.092	<0.272	1.1	NA	5.000	2.600 J	<0.092	<0.092	<0.092	NA	NA
D2-4	4	<0.110	<0.110	<0.110	<0.330	1.9	NA	5.500	21.000	<0.110	<0.110	<0.110	NA	NA
D3-4	4	<0.100	<0.100	<0.100	<0.310	34	NA	30.000	140	<0.100	<0.100	0.055 J	NA	NA
D4-4	4	<0.096	<0.096	<0.096	<0.286	0.82	NA	4.800	8.900	<0.096	<0.096	<0.096	NA	NA
D5-4	4	<0.94	<0.94	<0.94	<0.284	53	NA	50.000	69.000	<0.94	<0.94	<0.94	NA	NA
D6-4	4	<0.390	0.270 J	<0.390	0.210 J	1.8	NA	18.000	<19.000	<0.390	<0.390	<0.390	NA	NA
P1-4	4	<0.930	<0.930	<0.930	<2.830	2.1	NA	13.000	<46.000	<0.930	<0.930	<0.930	NA	NA
SP1		<0.0050	<0.0050	<0.0050	<0.010	<0.50	NA	0.017	4.000	<0.010	<0.010	<0.010	NA	NA
SP2		<0.0050	0.0062	0.010	0.177	3.8	NA	0.011	0.610	<0.010	<0.010	<0.010	NA	NA
SP3		<0.0050	<0.0050	<0.0050	<0.0100	<0.50	NA	<0.0050	0.900	<0.010	<0.010	<0.010	NA	NA
SP4		<0.0050	<0.0050	<0.0050	<0.0100	<0.50	NA	0.049	1.700	<0.010	<0.010	<0.010	NA	NA
SP5		<0.0050	<0.0050	<0.0050	0.054	<0.50	NA	0.039	3.500	<0.010	<0.010	<0.010	NA	NA
SP6 (a)		<0.0050	<0.0050	<0.0050	<0.0100	<0.50	NA	<0.0050	0.510	<0.010	<0.010	<0.010	NA	NA
SP7 (a)		<0.0050	<0.0050	<0.0050	<0.0100	<0.50	NA	<0.0050	<0.250	<0.010	<0.010	<0.010	NA	NA
Samples collected by Environmental Resolutions, Inc. on April 14 and 15, 2003. <b>BTEX and fuel oxygenate concentrations reported in µg/kg; TPHg, ethanol and methanol reported in mg/kg.</b>														
S-6-B1	6	0.78 J	0.71 J	<0.98	0.49 J	<0.27	NA	0.28 J	<20	<0.98	<0.98	<0.98	<0.10	<0.10
S-10-B1	10	11	11	1.7	2.57 J	<0.23	NA	<1.9	<19	<0.95	<0.95	<0.95	<0.10	<0.10
S-15-B1	15	0.46 J	<0.89	<0.89	<2.69	<0.25	NA	0.54 J	<18	<0.89	<0.89	<0.89	<0.10	<0.10
S-20-B1	20	<0.84	<0.84	<0.84	<2.54	<0.21	NA	<1.7	<17	<0.84	<0.84	<0.84	<0.10	<0.10
S-25-B1	25	<1.0	<1.0	<1.0	<3.1	<0.24	NA	<2.1	<21	<1.0	<1.0	<1.0	<0.10	<0.10
S-30-B1	30	<0.97	<0.97	<0.97	<2.87	0.12 J	NA	0.28 J	<19	<0.97	<0.97	<0.97	<0.10	<0.10
S-40-B1	40	0.72 J	0.53 J	<0.91	<2.71	0.26	NA	<1.8	<18	<0.91	<0.91	<0.91	<0.10	<0.10
S-50-B1	50	<1.1	<1.1	<1.1	<3.2	0.13 J	NA	<2.1	<21	<1.1	<1.1	<1.1	<0.10	<0.10

**TABLE 1**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Sample Number	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	MTBE	TBA	DIPE	ETBE	TAME	Ethanol	Methanol
Samples collected by Environmental Resolutions, Inc. on April 14 and 15, 2003 (continued). <b>BTEX and fuel oxygenate concentrations reported in µg/kg; TPHg, ethanol and methanol reported in mg/kg.</b>														
S-5-B2	5	<98	<98	<98	<298	<0.24	NA	1300	<2000	<98	<98	<98	<0.10	<0.10
S-10-B2	10	<88	<88	<88	<268	<0.23	NA	2600	<1800	<88	<88	<88	<0.10	<0.10
S-15-B2	15	<88	<88	<88	<268	0.070 J	NA	1000	<1800	<88	<88	<88	<0.10	<0.10
S-20-B2	20	3.1	<0.87	11	3.85	0.15 J	NA	36	13 J	<0.87	<0.87	<0.87	<0.10	<0.10
S-25-B2	25	1.0	<0.98	6.4	<2.98	0.17 J	NA	700	220	<0.98	<0.98	<0.98	<0.10	<0.10
S-30-B2	30	<98	<98	<98	<298	0.13 J	NA	1300	<2000	<98	<98	<98	<0.10	<0.10
S-35-B2	35	<1.0	0.42 J	<1.0	0.27 J	0.083 J	NA	1.8 J	<20	<1.0	<1.0	<1.0	<0.10	<0.10
S-40-B2	40	0.16 J	0.38 J	4.9	1.61 J	0.15 J	NA	1.3 J	<20	<0.99	<0.99	<0.99	<0.10	<0.10
S-45-B2	45	<95	2100	620	3600	83	NA	39 J	<1900	<95	<95	<95	<0.10	<0.10
S-50-B2	50	<370	45000	16000	92000	1300	NA	<740	<7400	<370	<370	<370	<0.10	<0.10
S-10-B3	10	<190	<190	<190	212 J	0.68	NA	21000	<3700	<190	<190	<190	<0.10	<0.10
S-15-B3	15	37 J	220	1000	8600	4.4	NA	6700	<1800	<90	<90	<90	<0.10	<0.10
S-20-B3	20	2.7	0.35 J	90	140.95	2.4	NA	720	23	<0.82	<0.82	<0.82	<0.10	<0.10
S-25-B3	25	0.60 J	0.45 J	6.3	20.1	0.12 J	NA	270	56	<0.92	<0.92	<0.92	<0.10	<0.10
S-30-B3	30	<0.97	<0.97	0.35 J	1.63 J	0.22	NA	5.9	<19	<0.97	<0.97	<0.97	<0.10	<0.10
S-35-B3	35	<110	<107	78 J	500	1.1	NA	1300	<2100	<110	<110	<110	NA	NA
S-45-B3	45	0.48 J	2.0	12	85	0.79	NA	150 J	45	<0.89	<0.89	<0.89	<0.10	<0.10
S-50-B3	50	0.35 J	1.5	10	71	0.46	NA	300	58	<0.87	<0.87	<0.87	<0.10	<0.10
Samples collected by Environmental Resolutions, Inc. on October 26 through 28, 2004. <b>Concentrations reported in mg/kg.</b>														
S-10-B4	10	0.0044	0.0039	<0.0013	<0.0013	<5.00	<10.1	<0.0013	<0.0321	<0.0013	<0.0013	<0.0013	<0.128	<10.0
S-15-B4	15	<0.0015	<0.0015	<0.0015	<0.0015	<5.00	<9.96	<0.0015	<0.0378	<0.0015	<0.0015	<0.0015	<0.151	<10.0
S-20-B4	20	<0.0011	<0.0011	<0.0011	<0.0011	<5.00	<10.1	<0.0011	<0.0274	<0.0011	<0.0011	<0.0011	<0.109	<10.0
S-25-B4	25	<0.0019	<0.0019	<0.0019	<0.0019	<5.00	<9.88	<0.0019	<0.0468	<0.0019	<0.0019	<0.0019	<0.187	29.8
S-30-B4	30	<0.0014	<0.0014	<0.0014	<0.0014	<5.00	<10.1	<0.0014	<0.0358	<0.0014	<0.0014	<0.0014	<0.143	25.1
S-35-B4	35	<0.0013	<0.0013	<0.0013	<0.0013	<5.00	<10.1	<0.0013	<0.0319	<0.0013	<0.0013	<0.0013	<0.128	<10.0
S-40-B4	40	<0.0012	<0.0012	<0.0012	<0.0012	<5.00	<10.0	<0.0012	<0.0303	<0.0012	<0.0012	<0.0012	<0.121	51.3
S-45-B4	45	<0.0014	<0.0014	<0.0014	<0.0014	<5.00	<9.88	<0.0014	<0.0356	<0.0014	<0.0014	<0.0014	<0.142	<10.0
S-50-B4	50	<0.0010	<0.0010	<0.0010	<0.0010	<5.00	<10.0	<0.0010	<0.0256	<0.0010	<0.0010	<0.0010	<0.102	<10.0
S-10-B5	10	0.0035	0.0027	0.0031	0.0148	<5.00	<10.1	<0.0013	<0.0333	<0.0013	<0.0013	<0.0013	<0.133	<10.0
S-15-B5	15	<0.0013	<0.0013	<0.0013	<0.0013	<5.00	<10.0	<0.0013	<0.0325	<0.0013	<0.0013	<0.0013	<0.130	<10.0
S-20-B5	20	0.0018	<0.0016	<0.0016	0.0026	<5.00	<9.88	<0.0016	<0.0399	<0.0016	<0.0016	<0.0016	<0.159	<10.0
S-25-B5	25	<0.0023	<0.0023	<0.0023	<0.0023	<5.00	<10.0	<0.0023	<0.0576	<0.0023	<0.0023	<0.0023	<0.230	199
S-30-B5	30	<0.0012	<0.0012	<0.0012	<0.0012	<5.00	<9.88	<0.0012	<0.0292	<0.0012	<0.0012	<0.0012	<0.117	17.3
S-35-B5	35	<0.0012	<0.0012	<0.0012	<0.0012	<5.00	<10.1	<0.0012	<0.0302	<0.0012	<0.0012	<0.0012	<0.121	<10.0

**TABLE 1**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Sample Number	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	MTBE	TBA	DIPE	ETBE	TAME	Ethanol	Methanol
Samples collected by Environmental Resolutions, Inc. on October 26 through 28, 2004 (continued). <b>Concentrations reported in mg/kg.</b>														
S-45-B6	45	<0.0016	0.0028	0.0073	0.0103	<5.00	<10.0	<0.0016	<0.0394	<0.0016	<0.0016	<0.0016	<0.158	57.0
S-50-B6	50	<0.0011	0.0131	0.0349	0.0558	<5.00	<9.92	<0.0011	<0.0278	<0.0011	<0.0011	<0.0011	<0.111	<10.0
S-10-B6	10	0.0058	0.0048	<0.0016	<0.0016	<5.00	<10.0	<0.0016	<0.0388	<0.0016	<0.0016	<0.0016	<0.155	<10.0
S-15-B6	15	<0.0015	<0.0015	<0.0015	<0.0015	<5.00	<9.80	<0.0015	<0.0382	<0.0015	<0.0015	<0.0015	<0.153	<10.0
S-20-B6	20	<0.0014	<0.0014	<0.0014	<0.0014	<5.00	<10.1	<0.0014	<0.0362	<0.0014	<0.0014	<0.0014	<0.145	<10.0
S-25-B6	25	<0.0014	<0.0014	<0.0014	<0.0014	<5.00	<10.1	<0.0014	<0.0344	<0.0014	<0.0014	<0.0014	<0.138	49.8
S-30-B6	30	<0.0013	<0.0013	<0.0013	<0.0013	<5.00	<10.1	<0.0013	<0.0334	<0.0013	<0.0013	<0.0013	<0.134	<10.0
S-35-B6	35	0.0023	0.0015	<0.0014	<0.0014	<5.00	<10.0	<0.0014	<0.0353	<0.0014	<0.0014	<0.0014	<0.141	<10.0
S-40-B6	40	<0.0012	<0.0012	<0.0012	<0.0012	<5.00	<10.1	<0.0012	<0.0312	<0.0012	<0.0012	<0.0012	<0.125	<10.0
S-45-B6	45	<0.0013	<0.0013	0.112	0.0608	<5.00	<10.1	<0.0013	<0.0318	<0.0013	<0.0013	<0.0013	<0.127	<10.0
S-50-B6	50	<0.0013	<0.0013	0.0930	0.0486	<5.00	<9.92	<0.0013	<0.0325	<0.0013	<0.0013	<0.0013	<0.130	<10.0
Samples collected by Environmental Resolutions, Inc. on March 16, 2005. <b>Concentrations reported in mg/kg.</b>														
S-10-B7	10	0.0063	0.0035	0.0026	0.0113	<4.87 J	67.7	<0.0017	<0.0427	<0.0017	<0.0017	<0.0017	<0.171	<5.00
S-15-B7	15	0.0009 J	<0.0016	<0.0016	<0.0016	<4.76	<1.00 J	<0.0016	<0.0394	<0.0016	<0.0016	<0.0016	<0.158	<5.00
S-20-B7	20	0.0025	0.0075	0.0097	0.0567	<4.74	<1.01 J	<0.0015	<0.0369	<0.0015	<0.0015	<0.0015	<0.147	<5.00
S-25-B7	25	<0.0017	<0.0017	<0.0017	<0.0017	<5.01	<1.00 J	<0.0017	<0.0427	<0.0017	<0.0017	<0.0017	<0.171	<5.00
S-30-B7	30	0.0025	<0.0016	0.0011 J	0.0049	<4.87	6.37	<0.0016	<0.0408	<0.0016	<0.0016	<0.0016	<0.163	<5.00
S-35-B7	35	0.0013 J	<0.0018	0.0025	0.0154	<4.86	<1.01 J	<0.0018	<0.0450	<0.0018	<0.0018	<0.0018	<0.180	<5.00
S-40-B7	40	<0.0019	<0.0019	<0.0019	<0.0019	<4.94	<1.01 J	<0.0019	<0.0465	<0.0019	<0.0019	<0.0019	<0.186	<5.00
S-45-B7	45	<0.0018	<0.0018	<0.0018	0.0012 J	<4.97	<1.01 J	<0.0018	<0.0456	<0.0018	<0.0018	<0.0018	<0.182	<5.00
S-50-B7	50	<0.0017	<0.0017	<0.0017	<0.0017	<4.80	<1.00 J	<0.0017	<0.0420	<0.0017	<0.0017	<0.0017	<0.168	<5.00
Samples collected by Environmental Resolutions, Inc. on May 31, June 1 and 2, 2005. <b>Concentrations reported in µg/kg.</b>														
S-5-B8	5	3.5	1.6 J	<2.7	<2.7	360 J	670 J	885	1070	<2.7	<2.7	<2.7	<270	NA
S-10-B8	10	7.3	5.8	1.2 J	1.6 J	11100	740 J	1.1 J	8540	<1.8	<1.8	<1.8	<177	NA
S-15-B8	15	1.3 J	1.3 J	0.9 J	1.2 J	700 J	920 J	2.0	7900	<1.7	<1.7	<1.7	<167	NA
S-20-B8	20	1.1 J	<1.5	53.4	1.5	1890	620 J	15.8	3140	<1.5	<1.5	<1.5	<152	NA
S-25-B8	25	16.0	3.5	15.3	26.2	400 J	780 J	224	545	<1.8	<1.8	<1.8	<180	NA
S-30-B8	30	1.4 J	1.6 J	271	45.9	1210	640 J	7.2	<43.7	<1.7	<1.7	<1.7	<175	NA
S-35-B8	35	<1.6	<1.6	1.0 J	<1.6	<1000	560 J	<1.6	<40.8	<1.6	<1.6	<1.6	<163	NA
S-40-B8	40	0.7 J	46.1	643	1270	12900	106000	<1.8	<46.0	<1.8	<1.8	<1.8	<184	NA
S-5-B9	5	8.6	451	260	1210	<1000	760 J	799	<46.5	<1.9	<1.9	<1.9	<186	NA
S-10-B9	10	3.0	4.4	2.0	7.5	6380	720 J	9400	1150	<1.7	<1.7	4.8	<171	NA
S-15-B9	15	91.8	2320	3520	22700	180000	2590	12800	<41.0	<1.6	<1.6	<1.6	<164	NA
S-20-B9	20	831	74400	47600	275000	539000	5790	31700	11400	<78.7	<78.7	<78.7	<7870	NA
S-25-B9	25	34.3	445	140	705	1800000	43400	6850	625	<1.4	<1.4	<1.4	<137	NA
S-30-B9	30	<1.6 J	17.4	1800	105	316000	13800	11.5	<41.7	<1.7	<1.7	<1.7	<167	NA
S-35-B9	35	7.3	1330	1020	5770	9570	2240	1050	363	<1.8	<1.8	<1.8	<180	NA
S-40-B9	40	<86.2	47.4 J	77.6 J	172	1060000	129000	64.7 J	<2160	<86.2	<86.2	<86.2	<8620	NA

**TABLE 1**  
**CUMULATIVE SOIL ANALYTICAL RESULTS**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Sample Number	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd	MTBE	TBA	DIPE	ETBE	TAME	Ethanol	Methanol
Samples collected by Environmental Resolutions, Inc. on May 31, June 1 and 2, 2005 (continued). Concentrations reported in ug/kg.														
S-5-B10	5	5.9	5.9	0.9 J	<2.1	<100	1060	33.2	43.7 J	<2.1	<2.1	<2.1	<211	NA
S-10-B10	10	3.5	3.1	<2.0	<2.0	100	750 J	32.5	152	<2.0	<2.0	<2.0	<196	NA
S-15-B10	15	1.8 J	1.9	<1.9	<1.9	400	2770	552	716	<1.9	<1.9	<1.9	<187	NA
S-20-B10	20	1.8	2.4	2.6	11.1	<100	4640	253	58.4	<1.5	<1.5	<1.5	<154	NA
S-25-B10	25	6.1	13.8	95.1	165	<100	760 J	194	<69.4	<2.8	<2.8	<2.8	<278	NA
S-30-B10	30	0.8 J	1.7 J	1.2 J	3.6	<100	920 J	20.7	21.2 J	<1.8	<1.8	<1.8	<175	NA
S-35-B10	35	1.2 J	1.2 J	1.3 J	<1.7	<100	440 J	8.9	<43.0	<1.7	<1.7	<1.7	<172	NA
S-40-B10	40	1.3 J	1.5 J	3.4	6.8	110	1130	29.6	<46.5	<1.9	<1.9	<1.9	<186	NA
S-10-B11	10	7.3	5.8	<1.6	10.3	<1000	NA	666	51.6	<1.6	<1.6	<1.6	<164	NA
S-15-B11	15	<1.7	<1.7	<1.7	25.1	<1000	NA	168	<42.1	<1.7	<1.7	<1.7	<168	NA
S-20-B11	20	<1.5	<1.5	<1.5	2.9	<1000	NA	27.4	<38.3	<1.5	<1.5	<1.5	<153	NA
S-25-B11	25	<1.8	<1.8	<1.8	<1.8	<1000	NA	15.4	<43.9	<1.8	<1.8	<1.8	<175	NA
S-30-B11	30	<1.7	<1.7	<1.7	<1.7	<1000	NA	<1.7	<43.4	<1.7	<1.7	<1.7	<174	NA
S-35-B11	35	<2.0	<2.0	<2.0	<2.0	<1000	NA	<2.0	<49.2	<2.0	<2.0	<2.0	<197	NA
S-40-B11	40	<2.0	<2.0	<2.0	<2.0	<1000	NA	<2.0	<49.3	<2.0	<2.0	<2.0	<197	NA

**EXPLANATION:**

mg/kg = milligrams per kilogram;

µg/kg = micrograms per kilogram

BTEX = benzene, toluene, ethylbenzene and total xylenes

DIPE = di-isopropyl ether

ETBE = ethyl tertiary butyl ether

MTBE = methyl tertiary butyl ether analyzed by Environmental Protection Agency Method 8260B

TAME = tertiary amyl methyl ether

TBA = tertiary butyl alcohol

TPHd = total petroleum hydrocarbons as diesel

TPHg = total petroleum hydrocarbons as gasoline

(a) = samples analyzed for total lead; results were: SP6, 8.27 mg/kg; SP7, 13.2 mg/kg

D = dispenser island; P = product line; SP = stockpile

J = estimated value between method detection limit and practical quantitation limit

NA = not analyzed

<8620 = not detected at or above stated laboratory reporting limit

**TABLE 2**  
**WATER LEVEL MEASUREMENTS AND GROUNDWATER ANALYSES**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

MW1	ELEV:	41.10	B	T	E	X	TPHg	MTBE	TBA
DATE	GW DEPTH	GW ELEV.							
10/26/05	28.19	12.91	0.480 J	0.440 J	2.44	11.2	80.5	1.11	<10.0
<b>MW2</b>	<b>ELEV:</b>	<b>39.55</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05	26.74	12.81	71.5	67.9	1330	61.5	5980	2070	865
<b>MW3</b>	<b>ELEV:</b>	<b>40.84</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05	27.96	12.88	1.16	<0.500	2.91	5.52	192	294	50.4
<b>MW4</b>	<b>ELEV:</b>	<b>39.10</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05			INACCESSIBLE - CITY HAS TRAFFIC CONTROL SET UP IN STREET						
<b>MW5</b>	<b>ELEV:</b>	<b>38.72</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05			INACCESSIBLE - CITY HAS TRAFFIC CONTROL SET UP IN STREET						
<b>MW6</b>	<b>ELEV:</b>	<b>39.21</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05	26.54	12.67	<0.500	0.470 J	189	32.1	2330	34.6	5.27 J
<b>MW7</b>	<b>ELEV:</b>	<b>41.14</b>							
DATE	GW DEPTH	GW ELEV.							
10/26/05	27.89	13.25	<0.500	0.650	11.4	52.7	<50.0	<1.00	<10.0

**EXPLANATION:**

Results in micrograms per liter (ug/l).

GW = groundwater; ELEV = elevation

B = benzene; T = toluene; E = ethylbenzene; X = total xylene isomers

MTBE = methyl tertiary butyl ether analyzed by Environmental Protection Agency Method 8260B

TBA = tertiary butyl alcohol

TPHg = total petroleum hydrocarbons as gasoline

<10.0 = not detected at or above stated laboratory reporting limit

**TABLE 3**  
**CUMULATIVE WATER LEVEL MEASUREMENTS AND GROUNDWATER ANALYSES**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Date	Well	Elev	GW Depth	GW Elev	LPH	Benzene (ug/l)	Toluene (ug/l)	Ethyl- benzene (ug/l)	Xylenes (ug/l)	TPHg (ug/l)	TPHd (ug/l)	TRPH (ug/l)	MTBE (ug/l)	DIPE (ug/l)	ETBE (ug/l)	TAME (ug/l)	TBA (ug/l)	Ethanol (ug/l)	Methanol (ug/l)
<b>Field Point</b>	<b>MW1</b>																		
4/17/2003	41.10	29.66	11.44	no	<1.00	<1.00	<1.00	<1.00	230	133	<100	<2.00	<1.00	<1.00	<1.00	<10.0	<1000	<10000	
8/26/2003	41.10	29.52	11.58	no	<1.00	<1.00	<1.00	<1.00	97.4	<500	<2.00	<1.00	<1.00	<1.00	<1.00	<10.0	<1000	<10000	
11/14/2003	41.10	29.88	11.22	no	<1.00	<1.00	<1.00	<1.00	<50.0	<500	<2.00	<1.00	<1.00	<1.00	<1.00	<10.0			
2/21/2004	41.10	30.03	11.07	no	<1.00	<1.00	<1.00	<1.00	<50.0	<500	<2.00	<1.00	<1.00	<1.00	<1.00	<10.0	<1000	<10000	
4/30/2004	41.10	29.85	11.25	no	<1.00	<1.00	<1.00	<1.00	<50.0	<500	<2.00	<1.00	<1.00	<1.00	<1.00	69.0			
7/10/2004	41.10	30.50	10.60	no	<1.00	<1.00	<1.00	<1.00	231	<500	2.90	<1.00	<1.00	<1.00	<1.00	<10.0			
11/5/2004	41.10	30.52	10.58	no	<1.00	<1.00	<1.00	<1.00	<50.0	<500	<2.00	<1.00	<1.00	<1.00	<1.00	<10.0			
3/21/2005	41.10	29.21	11.89	no	0.70	<0.50	0.60	3.40	<50.0	<500	6.10	<1.00	<1.00	1.00	17.0	<200	<5000		
6/2/2005	41.10	28.32	12.78	no	<0.50	<0.50	<0.50	<0.50	82.9	<500	1.90	<1.00	<1.00	<1.00	<1.00	9.20 J			
8/4/2005	41.10	27.92	13.18	no	<0.500	<0.500	<0.500	<0.500	308	<500	1.47	<1.00	<1.00	<1.00	<1.00	<10.0			
10/26/2005	41.10	28.19	12.91	no	0.480 J	0.440 J	2.44	11.2	80.5	35.2 J	1.11	<1.00	<1.00	<1.00	<1.00	<10.0			
<b>Field Point</b>	<b>MW2</b>																		
4/17/2003	39.55	28.43	11.12	no	5.90	3660	1340	3940	19900	2980	<100	131	<1.00	<1.00	<1.00	<10.0	<1000	<10000	
8/26/2003	39.55	28.31	11.24	no	118	1220	1260	625	15600	1490	5200	<1.00	<1.00	5.70	85.1	<1000	<10000		
11/14/2003	39.55	28.66	10.89	no	68.0	1280	1280	770	9810	1110	4260	<1.00	<1.00	<1.00	<1.00	142			
2/21/2004	39.55	28.82	10.73	no	47.1	560	1220	775	10600	1710	975	<1.00	<1.00	<1.00	<1.00	56.5	<1000	<10000	
4/30/2004	39.55	28.62	10.93	no	61.0	424	1390	550	9090	872	1040	<1.00	<1.00	<1.00	<1.00	<10.0			
7/10/2004	39.55	29.34	10.21	no	60.4	348	1260	402	8260	1220	920	<1.00	<1.00	<1.00	<1.00	125			
11/5/2004	39.55	29.31	10.24	no	66.7	238	930	190	6360	878	220	<1.00	<1.00	<1.00	<1.00	<10.0			

**TABLE 3**  
**CUMULATIVE WATER LEVEL MEASUREMENTS AND GROUNDWATER ANALYSES**  
**MOBIL STATION 18MLJ**  
**5005 NORTH LONG BEACH BOULEVARD**  
**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Date	Well	Elev	GW Depth	GW Elev	LPH	Benzene (ug/l)	Toluene (ug/l)	Ethyl- benzene (ug/l)	Xylenes (ug/l)	TPHg (ug/l)	TPHd (ug/l)	TRPH (ug/l)	MTBE (ug/l)	DIPE (ug/l)	ETBE (ug/l)	TAME (ug/l)	TBA (ug/l)	Ethanol (ug/l)	Methanol (ug/l)
3/21/2005		39.55	27.96	11.59	no	80.7	125	538	90.1	2670	<500		1370	<1.00	0.60 J	0.70 J	522	<200	<5000
6/2/2005		39.55	27.02	12.53	no	307	124	1630	277	16000	510		6780	<1.00	<1.00	<1.00	3550		
8/4/2005		39.55	26.62	12.93	no	6.26	181	855	307	5820	101 J		435	<1.00	<1.00	<1.00	129		
10/26/2005		39.55	26.74	12.81	no	71.5	67.9	1330	61.5	5980	317 J		2070	<1.00	<1.00	<1.00	865		
<b>Field Point MW3</b>																			
4/17/2003		40.84	29.34	11.50	no	<1.00	<1.00	1.50	7.70	2530	916	<100	105	<1.00	<1.00	<1.00	45.4	<1000	<10000
8/26/2003		40.84	29.26	11.58	no	<1.00	<1.00	1.60	<1.00	162	<500		112	<1.00	<1.00	<1.00	<10.0	<1000	<10000
11/14/2003		40.84	29.57	11.27	no	<1.00	<1.00	2.40	<1.00	179	<500		87.2	<1.00	<1.00	<1.00	<10.0		
2/21/2004		40.84	29.73	11.11	no	1.20	<1.00	2.30	<1.00	170	<500		116	<1.00	<1.00	<1.00	<10.0	<1000	<10000
4/30/2004		40.84	29.57	11.27	no	<1.00	<1.00	2.00	6.40	138	<500		137	<1.00	<1.00	<1.00	<10.0		
7/10/2004		40.84	30.31	10.53	no	<1.00	<1.00	2.80	<1.00	139	<500		89.6	<1.00	<1.00	<1.00	<10.0		
11/5/2004		40.84	30.25	10.59	no	1.50	<1.00	4.30	<1.00	181	<500		182	<1.00	<1.00	<1.00	50.3		
3/21/2005		40.84	28.88	11.96	no	2.60	<0.50	1.20	1.00	222	<500		120	<1.00	<1.00	<1.00	97.4	<200	<5000
6/2/2005		40.84	28.01	12.83	no	0.80	<0.50	0.50	<0.50	260	<500		167	<1.00	<1.00	<1.00	105		
8/4/2005		40.84	27.61	13.23	no	0.730	<0.500	1.06	<0.500	159	<500		140	<1.00	<1.00	<1.00	<10.0		
10/26/2005		40.84	27.96	12.88	no	1.16	<0.500	2.91	5.52	192	<500		294	<1.00	<1.00	<1.00	50.4		
<b>Field Point MW4</b>																			
11/5/2004		39.10	30.85	8.25	no	23.7	<1.00	<1.00	<1.00	247	<500		27.1	<1.00	<1.00	<1.00	5760		
3/21/2005		39.10	27.51	11.59	no	35.6	<0.50	0.90	13.8	2060	831		76.6	<1.00	1.20	1.10	49700	<200	1800 J
6/2/2005		39.10	26.62	12.48	no	8.70	<0.50	0.50	<0.50	538	<500		60.9	<1.00	<1.00	<1.00	19300		

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**LONG BEACH, CALIFORNIA**  
**ERI 3163**

Date	Well	Elev	GW Depth	GW Elev	LPH	Benzene (ug/l)	Toluene (ug/l)	Ethyl- benzene (ug/l)	Xylenes (ug/l)	TPHg (ug/l)	TPHd (ug/l)	TRPH (ug/l)	MTBE (ug/l)	DIPE (ug/l)	ETBE (ug/l)	TAME (ug/l)	TBA (ug/l)	Ethanol (ug/l)	Methanol (ug/l)
8/4/2005		39.10	26.21	12.89	no	0.510	<0.500	<0.500	<0.500	1950	<500	<1.00	<1.00	<1.00	<1.00	51.4			
10/26/2005		39.10			no	INACCESSIBLE - CITY HAS TRAFFIC CONTROL SET UP IN STREET													
<b>Field Point MW5</b>																			
11/5/2004		38.72	28.74	9.98	no	<1.00	119	280	900	6520	1330	<2.00	<1.00	<1.00	<1.00	<10.0			
3/21/2005		38.72	27.39	11.33	no	23.1	<0.50	8.10	1.40	1420	560	9.70	<1.00	<1.00	<1.00	5250	<200	<5000	
6/2/2005		38.72	26.48	12.24	no	0.90	2.40	1.80	2.90	315	<500	2.00	<1.00	<1.00	<1.00	697			
8/4/2005		38.72	26.08	12.64	no	5.14	54.9	140	229	2000	<500	4.40	<1.00	<1.00	<1.00	216			
10/26/2005		38.72			no	INACCESSIBLE - CITY HAS TRAFFIC CONTROL SET UP IN STREET													
<b>Field Point MW6</b>																			
11/5/2004		39.21	29.11	10.10	no	3.50	5.00	1120	404	8090	1580	<2.00	<1.00	<1.00	<1.00	<10.0			
3/21/2005		39.21	27.76	11.45	no	<0.50	<0.50	585	122	3960	749	<1.00	<1.00	<1.00	<1.00	<50.0	<200	1200 J	
6/2/2005		39.21	26.85	12.36	no	<0.50	0.40 J	826	116	5330	<500	<1.00	<1.00	<1.00	<1.00	<10.0			
8/4/2005		39.21	26.44	12.77	no	<0.500	1.94	685	94.3	4910	197 J	1.91	<1.00	<1.00	<1.00	<10.0			
10/26/2005		39.21	26.54	12.67	no	<0.500	0.470 J	189	32.1	2330	221 J	34.6	<1.00	<1.00	<1.00	5.27 J			
<b>Field Point MW7</b>																			
3/21/2005		41.14	29.09	12.05	no	<0.50	<0.50	<0.50	<0.50	<50.0	<500	0.50 J	<1.00	<1.00	<1.00	4.70 J	<200	<5000	
6/2/2005		41.14	28.13	13.01	no	<0.50	0.30 J	<0.50	<0.50	<50.0	<500	<1.00	<1.00	<1.00	<1.00	<10.0			
8/4/2005		41.14	27.79	13.35	no	<0.500	<0.500	<0.500	<0.500	79.0	<500	<1.00	<1.00	<1.00	<1.00	47.2			
10/26/2005		41.14	27.89	13.25	no	<0.500	0.650	11.4	52.7	<50.0	<500	<1.00	<1.00	<1.00	<1.00	<10.0			
<b>Field Point Trip Blank</b>																			
4/17/2003					no	<1.00	<1.00	<1.00	<1.00	<50.0		<2.00	<1.00	<1.00	<1.00	<10.0	<1000	<10000	

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**ERI 3163**

Date	Well	Elev	GW Depth	GW Elev	LPH	Benzene (ug/l)	Toluene (ug/l)	Ethyl- benzene (ug/l)	Xylenes (ug/l)	TPHg (ug/l)	TPHd (ug/l)	TRPH (ug/l)	MTBE (ug/l)	DIPE (ug/l)	ETBE (ug/l)	TAME (ug/l)	TBA (ug/l)	Ethanol (ug/l)	Methanol (ug/l)
8/26/2003		no	<1.00	<1.00		<1.00	<1.00	<1.00	<50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
11/14/2003		no	<1.00	<1.00		<1.00	<1.00	<1.00	<50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
2/21/2004		no	<1.00	<1.00		<1.00	<1.00	<1.00	<50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
4/30/2004		no	<1.00	1.00		<1.00	<1.00	<1.00	<50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
7/10/2004		no	<1.00	<1.00		<1.00	<1.00	<1.00	50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
11/5/2004		no	<1.00	<1.00		<1.00	<1.00	<1.00	<50.0			<2.00	<1.00	<1.00	<1.00	<10.0			
3/21/2005		no	<0.50	<0.50		<0.50	<0.50	<0.50	<50.0			<1.00	<1.00	<1.00	<1.00	<10.0			
6/2/2005		no	<0.50	<0.50		<0.50	<0.50	<0.50	<50.0			<1.00	<1.00	<1.00	<1.00	<10.0			
8/4/2005		no	<0.500	<0.500		<0.500	<0.500	<0.500	<50.0			<1.00	<1.00	<1.00	<1.00	<10.0			
10/26/2005		no	<0.500	<0.500		<0.500	<0.500	<0.500	<50.0			<1.00	<1.00	<1.00	<1.00	<10.0			

TABLE 3  
CUMULATIVE WATER LEVEL MEASUREMENTS AND GROUNDWATER ANALYSES  
MOBIL STATION 18MLJ  
5005 NORTH LONG BEACH BOULEVARD  
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ERI 3163

Explanation:

ELEV = elevation

EPA = Environmental Protection Agency

GW = groundwater

DIPE = di-isopropyl ether

ETBE = ethyl tertiary butyl ether

TAME = tertiary amyl methyl ether

TBA = tertiary butyl alcohol

TPHd = total petroleum hydrocarbons as diesel

TPHg = total petroleum hydrocarbons as gasoline

TRPH = total recoverable petroleum hydrocarbons

MTBE = methyl tertiary butyl ether

MTBE analyzed by EPA Method 8260B.

LPH = liquid phase hydrocarbons (thickness measured in feet)

J = estimated value between method detection limit and practical quantification limit

<10000 = not detected at or above stated laboratory reporting limit

ug/l = micrograms per liter

California Regional Water Quality Control Board  
 Non-Steady State Transport Model  
 Mobil Station 18JR1  
 2001 West Alondra Boulevard, Compton, California  
 CRWQCB - Los Angeles Region Case No. R-09372

ExxonMobil Oil Corporation Station 18MLJ, 5005 N. Long Beach Blvd, Long Beach			Range	Soil Type	Velocity Range
X axis dispersivity	0.25 ft	0.1-10	Gravel	up to 3 ft/d	
Y axis dispersivity	0.0825 ft	(0.33-0.65) D <sub>g</sub>	Coarse Sand	up to 1.5 ft/d	
Distance parallel to direction of GW flow	20 ft		Clean Sand	up to 1.0 ft/d	
Distance perpendicular to direction of GW flow	5 ft		Fine Sand	up to 0.5 ft/d	
Groundwater velocity	0.059 ft/day	0.01-3.0	Silty Sand	up to 0.1 ft/d	
Source concentration	4.24E+06 ug/L	4.24E+03	Sandy Silt	0.01-0.05 ft/d	
Rate of discharge	25 ft <sup>2</sup> /yr	mg/L	Silt	0.01 ft/d	
Discharge duration or <i>dt</i>	8.33E-02 yr		Soil Type	Date 2nd? Release Disc'd	
Mass discharged per unit depth (C <sub>0</sub> Q <sub>dt</sub> )	2.50E+08 ug/ft		poorly sorted sand	Apr-03	
	2.50E+02 g/ft			Date of 1st Monit. Event	
Distance (X <sub>2</sub> ) to DG well 2	100 ft			4/17/2003	
Distance (Y <sub>2</sub> ) perpendicular to direction of flow	2 ft			GW at ~ 28 fbg	
Distance (X <sub>3</sub> ) to drinking water well	2170 ft			Silt and sandy silt 0-20 fbg	
Distance (Y <sub>3</sub> ) perpendicular to direction of flow	0 ft			Sand 20 fbg - TD	
Maximum concentration in drinking water well	2074.02 ug/L				
Time when plume reached its peak in DW well	37000 days				
Time when plume first reached 5 ug/L in DW well	35000 days				
Time remaining for plume to reach 5 ug/L in DW well	91.3 years				
Well Name	Well No	Distance(x)	Distance(y)	C (ug/L)	Time (days)
Downgradient Well 1 at T <sub>1</sub>	MW2	20	5	131	210
T <sub>2</sub>				5200	341
T <sub>3</sub>				4260	421
T <sub>4</sub>				975	520
T <sub>5</sub>				1040	589
T <sub>6</sub>				920	660
T <sub>7</sub>				220	778
T <sub>8</sub>				1370	914
T <sub>9</sub>				6780	987
T <sub>10</sub>					
T <sub>11</sub>					
T <sub>12</sub>					
T <sub>13</sub>					
T <sub>14</sub>					
T <sub>15</sub>					
<b>Date of Last Record</b>					
Downgradient Well 2 at T <sub>1</sub>	MW5	100	2	2	778
T <sub>2</sub>				9.7	914
T <sub>3</sub>				2	987
T <sub>4</sub>					
T <sub>5</sub>					
T <sub>6</sub>					
T <sub>7</sub>					
T <sub>8</sub>					
T <sub>9</sub>					
T <sub>10</sub>					
T <sub>11</sub>					
T <sub>12</sub>					
T <sub>13</sub>					
T <sub>14</sub>					
T <sub>15</sub>					
<b>Date of Last Record</b>	<b>Date of First Record</b>				

California Regional Water Quality Control Board  
Non-Steady State Transport Model  
Mobil Station 18JR1  
2001 West Alondra Boulevard, Compton, California  
CRWQCB - Los Angeles Region Case No. R-09372

Fig. 1 Field Data and Model Predicted Time Vs. MTBE Concentration Profile for Down-Gradient (DG) Well-1

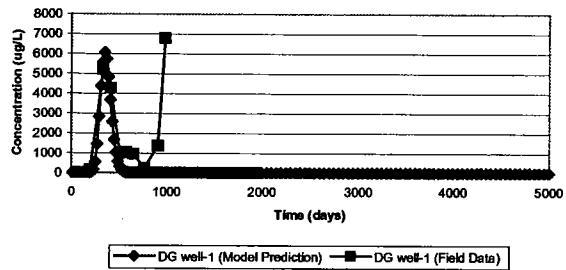


Fig. 2 Field Data and Model Predicted Time Vs. MTBE Concentration Profile for Down-Gradient (DG) Well-2

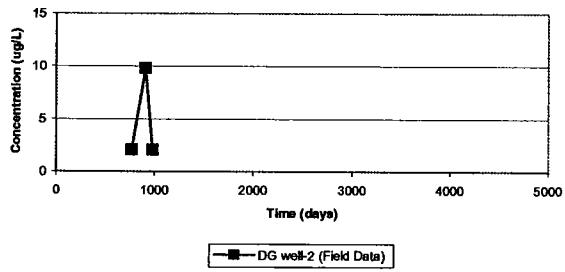
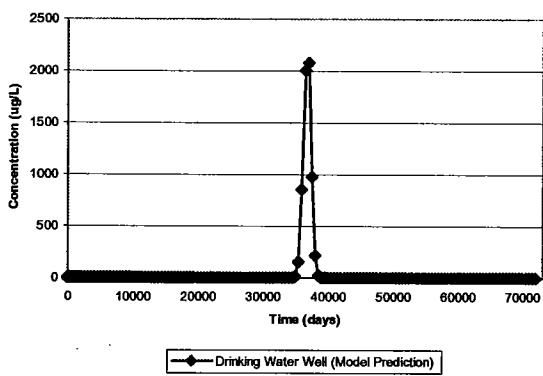


Fig. 3 Model Predicted Time Vs. MTBE Concentration Profile for Drinking Water Well



November 09, 2005

Client: ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn: George Salley

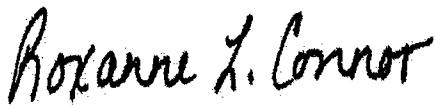
Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Nbr: ERI 3163 13  
Date Received: 10/28/05

SAMPLE IDENTIFICATION	LAB NUMBER	COLLECTION DATE AND TIME
W-27-MW7	NOJ3097-01	10/26/05 11:00
W-28-MW1	NOJ3097-02	10/26/05 11:05
W-27-MW3	NOJ3097-03	10/26/05 11:10
W-26-MW6	NOJ3097-04	10/26/05 11:15
W-26-MW2	NOJ3097-05	10/26/05 11:20
Trip Blanks	NOJ3097-06	10/26/05

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accreditation.

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These results relate only to the items tested. This report shall not be reproduced except in full and with permission of the laboratory.  
Report Approved By:



Roxanne Connor  
Senior Project Manager

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Analyst	Batch
<b>Sample ID: NOJ3097-01 (W-27-MW7 - Ground Water) Sampled: 10/26/05 11:00</b>										
Oxygenates by EPA 8260B										
Tert-Amyl Methyl Ether <1.00 ug/L 0.300 1.00 1 11/03/05 20:18 SW846 8260B sle 5110483										
Benzene <0.500 ug/L 0.250 0.500 1 11/03/05 20:18 SW846 8260B sle 5110483										
Ethyl tert-Butyl Ether <1.00 ug/L 0.270 1.00 1 11/03/05 20:18 SW846 8260B sle 5110483										
Ethylbenzene 11.4 ug/L 0.190 0.500 1 11/03/05 20:18 SW846 8260B sle 5110483										
Isopropyl Ether <1.00 ug/L 0.180 1.00 1 11/03/05 20:18 SW846 8260B sle 5110483										
Methyl tert-Butyl Ether <1.00 ug/L 0.230 1.00 1 11/03/05 20:18 SW846 8260B sle 5110483										
Toluene 0.650 ug/L 0.170 0.500 1 11/03/05 20:18 SW846 8260B sle 5110483										
Tertiary Butyl Alcohol <10.0 ug/L 4.28 10.0 1 11/03/05 20:18 SW846 8260B sle 5110483										
Xylenes, total 52.7 ug/L 0.330 0.500 1 11/03/05 20:18 SW846 8260B sle 5110483										
Surrogate: 1,2-Dichloroethane-d4 (70-130%) 91 % - - 1 11/03/05 20:18 SW846 8260B sle 5110483										
Surrogate: Dibromofluoromethane (79-122%) 94 % - - 1 11/03/05 20:18 SW846 8260B sle 5110483										
Surrogate: Toluene-d8 (78-121%) 104 % - - 1 11/03/05 20:18 SW846 8260B sle 5110483										
Surrogate: 4-Bromofluorobenzene (78-126%) 111 % - - 1 11/03/05 20:18 SW846 8260B sle 5110483										
Extractable Petroleum Hydrocarbons										
Diesel range organics <500 QSG ug/L 33.0 500 1 10/31/05 20:43 CA LUFT mcj 5104565										
Surrogate: o-Terphenyl (55-150%) 70 % - - 1 10/31/05 20:43 CA LUFT mcj 5104565										
Purgeable Petroleum Hydrocarbons										
GRO (C4-C12) <50.0 ug/L 40.0 50.0 1 11/03/05 19:16 CA LUFT HW/ 5110537										
Surrogate: a,a,a-Trifluorotoluene (63-134%) 100 % - - 1 11/03/05 19:16 CA LUFT HW/ 5110537										
<b>Sample ID: NOJ3097-02 (W-28-MW1 - Ground Water) Sampled: 10/26/05 11:05</b>										
Oxygenates by EPA 8260B										
Tert-Amyl Methyl Ether <1.00 ug/L 0.300 1.00 1 11/03/05 20:47 SW846 8260B sle 5110483										
Benzene 0.480 J ug/L 0.250 0.500 1 11/03/05 20:47 SW846 8260B sle 5110483										
Ethyl tert-Butyl Ether <1.00 ug/L 0.270 1.00 1 11/03/05 20:47 SW846 8260B sle 5110483										
Ethylbenzene 2.44 ug/L 0.190 0.500 1 11/03/05 20:47 SW846 8260B sle 5110483										
Isopropyl Ether <1.00 ug/L 0.180 1.00 1 11/03/05 20:47 SW846 8260B sle 5110483										
Methyl tert-Butyl Ether 1.11 ug/L 0.230 1.00 1 11/03/05 20:47 SW846 8260B sle 5110483										
Toluene 0.440 J ug/L 0.170 0.500 1 11/03/05 20:47 SW846 8260B sle 5110483										
Tertiary Butyl Alcohol <10.0 ug/L 4.28 10.0 1 11/03/05 20:47 SW846 8260B sle 5110483										
Xylenes, total 11.2 ug/L 0.330 0.500 1 11/03/05 20:47 SW846 8260B sle 5110483										
Surrogate: 1,2-Dichloroethane-d4 (70-130%) 94 % - - 1 11/03/05 20:47 SW846 8260B sle 5110483										
Surrogate: Dibromofluoromethane (79-122%) 98 % - - 1 11/03/05 20:47 SW846 8260B sle 5110483										
Surrogate: Toluene-d8 (78-121%) 106 % - - 1 11/03/05 20:47 SW846 8260B sle 5110483										
Surrogate: 4-Bromofluorobenzene (78-126%) 110 % - - 1 11/03/05 20:47 SW846 8260B sle 5110483										
Extractable Petroleum Hydrocarbons										
Diesel range organics 35.2 QSG, J ug/L 33.0 500 1 10/31/05 21:01 CA LUFT mcj 5104565										
Surrogate: o-Terphenyl (55-150%) 78 % - - 1 10/31/05 21:01 CA LUFT mcj 5104565										
Purgeable Petroleum Hydrocarbons										
GRO (C4-C12) 80.5 ug/L 40.0 50.0 1 11/03/05 19:50 CA LUFT HW/ 5110537										
Surrogate: a,a,a-Trifluorotoluene (63-134%) 101 % - - 1 11/03/05 19:50 CA LUFT HW/ 5110537										

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Analyst	Batch
<b>Sample ID: NOJ3097-03 (W-27-MW3 - Ground Water) Sampled: 10/26/05 11:10</b>										
Oxygenates by EPA 8260B										
Tert-Amyl Methyl Ether	<1.00		ug/L	0.300	1.00	1	11/03/05 21:17	SW846 8260B	sle	5110483
Benzene	<b>1.16</b>		ug/L	0.250	0.500	1	11/03/05 21:17	SW846 8260B	sle	5110483
Ethyl tert-Butyl Ether	<1.00		ug/L	0.270	1.00	1	11/03/05 21:17	SW846 8260B	sle	5110483
Ethylbenzene	<b>2.91</b>		ug/L	0.190	0.500	1	11/03/05 21:17	SW846 8260B	sle	5110483
Isopropyl Ether	<1.00		ug/L	0.180	1.00	1	11/03/05 21:17	SW846 8260B	sle	5110483
Methyl tert-Butyl Ether	<b>294</b>		ug/L	2.30	10.0	10	11/04/05 18:06	SW846 8260B	sle	5110998
Toluene	<0.500		ug/L	0.170	0.500	1	11/03/05 21:17	SW846 8260B	sle	5110483
Tertiary Butyl Alcohol	<b>50.4</b>		ug/L	4.28	10.0	1	11/03/05 21:17	SW846 8260B	sle	5110483
Xylenes, total	<b>5.52</b>		ug/L	0.330	0.500	1	11/03/05 21:17	SW846 8260B	sle	5110483
Surrogate: 1,2-Dichloroethane-d4 (70-130%)	95 %		-	-	-	I	11/03/05 21:17	SW846 8260B	sle	5110483
Surrogate: 1,2-Dichloroethane-d4 (70-130%)	101 %		-	-	-	I	11/04/05 18:06	SW846 8260B	sle	5110998
Surrogate: Dibromoformmethane (79-122%)	98 %		-	-	-	I	11/03/05 21:17	SW846 8260B	sle	5110483
Surrogate: Dibromoformmethane (79-122%)	104 %		-	-	-	I	11/04/05 18:06	SW846 8260B	sle	5110998
Surrogate: Toluene-d8 (78-121%)	107 %		-	-	-	I	11/03/05 21:17	SW846 8260B	sle	5110483
Surrogate: Toluene-d8 (78-121%)	104 %		-	-	-	I	11/04/05 18:06	SW846 8260B	sle	5110998
Surrogate: 4-Bromofluorobenzene (78-126%)	109 %		-	-	-	I	11/03/05 21:17	SW846 8260B	sle	5110483
Surrogate: 4-Bromofluorobenzene (78-126%)	111 %		-	-	-	I	11/04/05 18:06	SW846 8260B	sle	5110998
Extractable Petroleum Hydrocarbons										
Diesel range organics	<500	QSG	ug/L	33.0	500	1	10/31/05 21:18	CA LUFT	mcj	5104565
Surrogate: o-Terphenyl (55-150%)	82 %		-	-	-	I	10/31/05 21:18	CA LUFT	mcj	5104565
Purgeable Petroleum Hydrocarbons										
GRO (C4-C12)	<b>192</b>		ug/L	40.0	50.0	1	11/03/05 20:25	CA LUFT	HW/	5110537
Surrogate: a,a,a-Trifluorotoluene (63-134%)	103 %		-	-	-	I	11/03/05 20:25	CA LUFT	HW/	5110537
<b>Sample ID: NOJ3097-04 (W-26-MW6 - Ground Water) Sampled: 10/26/05 11:15</b>										
Oxygenates by EPA 8260B										
Tert-Amyl Methyl Ether	<1.00		ug/L	0.300	1.00	1	11/03/05 21:47	SW846 8260B	sle	5110483
Benzene	<0.500		ug/L	0.250	0.500	1	11/03/05 21:47	SW846 8260B	sle	5110483
Ethyl tert-Butyl Ether	<1.00		ug/L	0.270	1.00	1	11/03/05 21:47	SW846 8260B	sle	5110483
Ethylbenzene	<b>189</b>		ug/L	0.190	0.500	1	11/03/05 21:47	SW846 8260B	sle	5110483
Isopropyl Ether	<1.00		ug/L	0.180	1.00	1	11/03/05 21:47	SW846 8260B	sle	5110483
Methyl tert-Butyl Ether	<b>34.6</b>		ug/L	0.230	1.00	1	11/03/05 21:47	SW846 8260B	sle	5110483
Toluene	<b>0.470</b>	J	ug/L	0.170	0.500	1	11/03/05 21:47	SW846 8260B	sle	5110483
Tertiary Butyl Alcohol	<b>5.27</b>	J	ug/L	4.28	10.0	1	11/03/05 21:47	SW846 8260B	sle	5110483
Xylenes, total	<b>32.1</b>		ug/L	0.330	0.500	1	11/03/05 21:47	SW846 8260B	sle	5110483
Surrogate: 1,2-Dichloroethane-d4 (70-130%)	94 %		-	-	-	I	11/03/05 21:47	SW846 8260B	sle	5110483
Surrogate: Dibromoformmethane (79-122%)	98 %		-	-	-	I	11/03/05 21:47	SW846 8260B	sle	5110483
Surrogate: Toluene-d8 (78-121%)	107 %		-	-	-	I	11/03/05 21:47	SW846 8260B	sle	5110483
Surrogate: 4-Bromofluorobenzene (78-126%)	112 %		-	-	-	I	11/03/05 21:47	SW846 8260B	sle	5110483
Extractable Petroleum Hydrocarbons										
Diesel range organics	<b>221</b>	J, QSG	ug/L	33.0	500	1	10/31/05 21:36	CA LUFT	mcj	5104565
Surrogate: o-Terphenyl (55-150%)	86 %		-	-	-	I	10/31/05 21:36	CA LUFT	mcj	5104565
Purgeable Petroleum Hydrocarbons										

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Analyst	Batch
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### Sample ID: NOJ3097-04 (W-26-MW6 - Ground Water) - cont. Sampled: 10/26/05 11:15

Purgeable Petroleum Hydrocarbons - cont.

GRO (C4-C12)	<b>2330</b>		ug/L	200	250	5	11/04/05 02:48	CA LUFT	HW/ HW/	5110537 5110537
Surrogate: <i>a,a,a-Trifluorotoluene</i> (63-134%)	105 %		-	-	-	5	11/04/05 02:48	CA LUFT		

### Sample ID: NOJ3097-05 (W-26-MW2 - Ground Water) Sampled: 10/26/05 11:20

Oxygenates by EPA 8260B

Tert-Amyl Methyl Ether	<1.00		ug/L	0.300	1.00	1	11/03/05 22:16	SW846 8260B	sle	5110483
Benzene	<b>71.5</b>		ug/L	0.250	0.500	1	11/03/05 22:16	SW846 8260B	sle	5110483
Ethyl tert-Butyl Ether	<1.00		ug/L	0.270	1.00	1	11/03/05 22:16	SW846 8260B	sle	5110483
Ethylbenzene	<b>1330</b>		ug/L	3.80	10.0	20	11/04/05 19:34	SW846 8260B	sle	5110998
Isopropyl Ether	<1.00		ug/L	0.180	1.00	1	11/03/05 22:16	SW846 8260B	sle	5110483
Methyl tert-Butyl Ether	<b>2070</b>		ug/L	4.60	20.0	20	11/04/05 19:34	SW846 8260B	sle	5110998
Toluene	<b>67.9</b>		ug/L	0.170	0.500	1	11/03/05 22:16	SW846 8260B	sle	5110483
Tertiary Butyl Alcohol	<b>865</b>		ug/L	4.28	10.0	1	11/03/05 22:16	SW846 8260B	sle	5110483
Xylenes, total	<b>61.5</b>		ug/L	0.330	0.500	1	11/03/05 22:16	SW846 8260B	sle	5110483
Surrogate: <i>I,2-Dichloroethane-d4</i> (70-130%)	93 %		-	-	-	1	11/03/05 22:16	SW846 8260B	sle	5110483
Surrogate: <i>I,2-Dichloroethane-d4</i> (70-130%)	98 %		-	-	-	1	11/04/05 19:34	SW846 8260B	sle	5110998
Surrogate: <i>Dibromofluoromethane</i> (79-122%)	99 %		-	-	-	1	11/03/05 22:16	SW846 8260B	sle	5110483
Surrogate: <i>Dibromofluoromethane</i> (79-122%)	100 %		-	-	-	1	11/04/05 19:34	SW846 8260B	sle	5110998
Surrogate: <i>Toluene-d8</i> (78-121%)	106 %		-	-	-	1	11/03/05 22:16	SW846 8260B	sle	5110483
Surrogate: <i>Toluene-d8</i> (78-121%)	107 %		-	-	-	1	11/04/05 19:34	SW846 8260B	sle	5110998
Surrogate: <i>4-Bromofluorobenzene</i> (78-126%)	114 %		-	-	-	1	11/03/05 22:16	SW846 8260B	sle	5110483
Surrogate: <i>4-Bromofluorobenzene</i> (78-126%)	109 %		-	-	-	1	11/04/05 19:34	SW846 8260B	sle	5110998

### Extractable Petroleum Hydrocarbons

Diesel range organics	<b>317</b>	J, QSG	ug/L	33.0	500	1	10/31/05 21:53	CA LUFT	mcj	5104565
Surrogate: <i>o-Terphenyl</i> (55-150%)	80 %		-	-	-	1	10/31/05 21:53	CA LUFT	mcj	5104565

### Purgeable Petroleum Hydrocarbons

GRO (C4-C12)	<b>5980</b>		ug/L	400	500	10	11/04/05 03:23	CA LUFT	HW/ HW/	5110537 5110537
Surrogate: <i>a,a,a-Trifluorotoluene</i> (63-134%)	105 %		-	-	-	10	11/04/05 03:23	CA LUFT		

### Sample ID: NOJ3097-06 (Trip Blanks - Ground Water) Sampled: 10/26/05

Oxygenates by EPA 8260B

Tert-Amyl Methyl Ether	<1.00		ug/L	0.300	1.00	1	11/07/05 17:49	SW846 8260B	BxW	5110999
Benzene	<0.500		ug/L	0.250	0.500	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Ethyl tert-Butyl Ether	<1.00		ug/L	0.270	1.00	1	11/07/05 17:49	SW846 8260B	BxW	5110999
Ethylbenzene	<0.500		ug/L	0.190	0.500	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Isopropyl Ether	<1.00		ug/L	0.180	1.00	1	11/07/05 17:49	SW846 8260B	BxW	5110311
Methyl tert-Butyl Ether	<1.00		ug/L	0.230	1.00	1	11/07/05 17:49	SW846 8260B	BxW	5110999
Toluene	<0.500		ug/L	0.170	0.500	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Tertiary Butyl Alcohol	<10.0		ug/L	4.28	10.0	1	11/07/05 17:49	SW846 8260B	BxW	5110999
Xylenes, total	<0.500		ug/L	0.330	0.500	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Surrogate: <i>I,2-Dichloroethane-d4</i> (70-130%)	102 %		-	-	-	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Surrogate: <i>Dibromofluoromethane</i> (79-122%)	104 %		-	-	-	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Surrogate: <i>Toluene-d8</i> (78-121%)	103 %		-	-	-	1	10/31/05 15:41	SW846 8260B	BxW	5110311
Surrogate: <i>4-Bromofluorobenzene</i> (78-126%)	110 %		-	-	-	1	10/31/05 15:41	SW846 8260B	BxW	5110311

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## ANALYTICAL REPORT

Analyte	Result	Flag	Units	MDL	MRL	Dilution Factor	Analysis Date/Time	Method	Analyst	Batch
<b>Sample ID: NOJ3097-06 (Trip Blanks - Ground Water) - cont. Sampled: 10/26/05</b>										
Purgeable Petroleum Hydrocarbons	GRO (C4-C12)	<50.0	ug/L	40.0	50.0	1	11/03/05 18:41	CA LUFT	HW/	5110537
	Surrogate: <i>a,a,a-Trifluorotoluene</i> (63-134%)	100 %		-	-	I	11/03/05 18:41	CA LUFT	HW/	5110537

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
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Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## SAMPLE EXTRACTION DATA

Parameter	Batch	Lab Number	Wt/Vol Extracted	Extracted Vol	Date	Analyst	Extraction Method
<b>Extractable Petroleum Hydrocarbons</b>							
CA LUFT	5104565	NOJ3097-01	1000.00	1.00	10/29/05 14:00	RXT	EPA 3510C
CA LUFT	5104565	NOJ3097-02	1000.00	1.00	10/29/05 14:00	RXT	EPA 3510C
CA LUFT	5104565	NOJ3097-03	1000.00	1.00	10/29/05 14:00	RXT	EPA 3510C
CA LUFT	5104565	NOJ3097-04	1000.00	1.00	10/29/05 14:00	RXT	EPA 3510C
CA LUFT	5104565	NOJ3097-05	1000.00	1.00	10/29/05 14:00	RXT	EPA 3510C

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Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA

### Blank

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
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#### Volatile Organic Compounds by EPA Method 8260B

##### **5110311-BLK1**

Benzene	<0.200		ug/L	5110311	5110311-BLK1	10/31/05 11:44
Ethylbenzene	<0.190		ug/L	5110311	5110311-BLK1	10/31/05 11:44
Toluene	<0.170		ug/L	5110311	5110311-BLK1	10/31/05 11:44
Xylenes, total	<0.330		ug/L	5110311	5110311-BLK1	10/31/05 11:44
Surrogate: 1,2-Dichloroethane-d4	101%			5110311	5110311-BLK1	10/31/05 11:44
Surrogate: Dibromofluoromethane	104%			5110311	5110311-BLK1	10/31/05 11:44
Surrogate: Toluene-d8	106%			5110311	5110311-BLK1	10/31/05 11:44
Surrogate: 4-Bromofluorobenzene	109%			5110311	5110311-BLK1	10/31/05 11:44

##### **5110483-BLK1**

Tert-Amyl Methyl Ether	<0.200		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Benzene	<0.200		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Ethyl tert-Butyl Ether	<0.200		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Ethylbenzene	<0.190		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Isopropyl Ether	<0.180		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Methyl tert-Butyl Ether	<0.200		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Toluene	<0.170		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Tertiary Butyl Alcohol	<4.28		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Xylenes, total	<0.330		ug/L	5110483	5110483-BLK1	11/03/05 14:42
Surrogate: 1,2-Dichloroethane-d4	98%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: 1,2-Dichloroethane-d4	98%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: Dibromofluoromethane	101%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: Dibromofluoromethane	101%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: Toluene-d8	110%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: Toluene-d8	110%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: 4-Bromofluorobenzene	107%			5110483	5110483-BLK1	11/03/05 14:42
Surrogate: 4-Bromofluorobenzene	107%			5110483	5110483-BLK1	11/03/05 14:42

##### **5110483-BLK2**

Tert-Amyl Methyl Ether	<0.200		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Benzene	<0.200		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Ethyl tert-Butyl Ether	<0.200		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Ethylbenzene	<0.190		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Isopropyl Ether	<0.180		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Methyl tert-Butyl Ether	<0.200		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Toluene	<0.170		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Tertiary Butyl Alcohol	<4.28		ug/L	5110483	5110483-BLK2	11/04/05 03:12
Xylenes, total	0.420	J	ug/L	5110483	5110483-BLK2	11/04/05 03:12
Surrogate: 1,2-Dichloroethane-d4	94%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: 1,2-Dichloroethane-d4	94%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: Dibromofluoromethane	99%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: Dibromofluoromethane	99%			5110483	5110483-BLK2	11/04/05 03:12

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

**PROJECT QUALITY CONTROL DATA**  
**Blank - Cont.**

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
<b>Volatile Organic Compounds by EPA Method 8260B</b>						
<b>5110483-BLK2</b>						
Surrogate: Toluene-d8	106%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: Toluene-d8	106%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: 4-Bromofluorobenzene	110%			5110483	5110483-BLK2	11/04/05 03:12
Surrogate: 4-Bromofluorobenzene	110%			5110483	5110483-BLK2	11/04/05 03:12
<b>5110998-BLK1</b>						
Tert-Amyl Methyl Ether	<0.200		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Benzene	<0.200		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Ethyl tert-Butyl Ether	<0.200		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Ethylbenzene	<0.190		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Isopropyl Ether	<0.180		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Methyl tert-Butyl Ether	<0.200		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Toluene	<0.170		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Tertiary Butyl Alcohol	<4.28		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Xylenes, total	<0.330		ug/L	5110998	5110998-BLK1	11/04/05 14:38
Surrogate: 1,2-Dichloroethane-d4	98%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: 1,2-Dichloroethane-d4	98%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: Dibromofluoromethane	101%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: Dibromofluoromethane	101%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: Toluene-d8	107%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: Toluene-d8	107%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: 4-Bromofluorobenzene	113%			5110998	5110998-BLK1	11/04/05 14:38
Surrogate: 4-Bromofluorobenzene	113%			5110998	5110998-BLK1	11/04/05 14:38
<b>5110998-BLK2</b>						
Tert-Amyl Methyl Ether	<0.200		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Benzene	<0.200		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Ethyl tert-Butyl Ether	<0.200		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Ethylbenzene	<0.190		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Isopropyl Ether	<0.180		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Methyl tert-Butyl Ether	<0.200		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Toluene	<0.170		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Tertiary Butyl Alcohol	<4.28		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Xylenes, total	<0.330		ug/L	5110998	5110998-BLK2	11/05/05 01:58
Surrogate: 1,2-Dichloroethane-d4	101%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: 1,2-Dichloroethane-d4	101%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: Dibromofluoromethane	102%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: Dibromofluoromethane	102%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: Toluene-d8	106%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: Toluene-d8	106%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: 4-Bromofluorobenzene	111%			5110998	5110998-BLK2	11/05/05 01:58
Surrogate: 4-Bromofluorobenzene	111%			5110998	5110998-BLK2	11/05/05 01:58

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA Blank - Cont.

Analyte	Blank Value	Q	Units	Q.C. Batch	Lab Number	Analyzed Date/Time
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**Volatile Organic Compounds by EPA Method 8260B**
**5110999-BLK1**

Tert-Amyl Methyl Ether	<0.200		ug/L	5110999	5110999-BLK1	11/07/05 17:19
Ethyl tert-Butyl Ether	<0.200		ug/L	5110999	5110999-BLK1	11/07/05 17:19
Isopropyl Ether	<0.180		ug/L	5110999	5110999-BLK1	11/07/05 17:19
Methyl tert-Butyl Ether	<0.200		ug/L	5110999	5110999-BLK1	11/07/05 17:19
Tertiary Butyl Alcohol	<4.28		ug/L	5110999	5110999-BLK1	11/07/05 17:19
Surrogate: 1,2-Dichloroethane-d4	95%			5110999	5110999-BLK1	11/07/05 17:19
Surrogate: Dibromoformmethane	107%			5110999	5110999-BLK1	11/07/05 17:19
Surrogate: Toluene-d8	101%			5110999	5110999-BLK1	11/07/05 17:19
Surrogate: 4-Bromofluorobenzene	107%			5110999	5110999-BLK1	11/07/05 17:19

**Extractable Petroleum Hydrocarbons**
**5104565-BLK1**

Diesel range organics	<33.0		ug/L	5104565	5104565-BLK1	10/31/05 20:09
Surrogate: o-Terphenyl	76%			5104565	5104565-BLK1	10/31/05 20:09

**Purgeable Petroleum Hydrocarbons**
**5110537-BLK1**

GRO (C4-C12)	<40.0		ug/L	5110537	5110537-BLK1	11/03/05 18:06
Surrogate: a,a,a-Trifluorotoluene	101%			5110537	5110537-BLK1	11/03/05 18:06

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA LCS

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Volatile Organic Compounds by EPA Method 8260B</b>								
<b>5110311-BS1</b>								
Benzene	50.0	52.1		ug/L	104%	79 - 123	5110311	10/31/05 10:10
Ethylbenzene	50.0	55.5		ug/L	111%	80 - 124	5110311	10/31/05 10:10
Toluene	50.0	54.7		ug/L	109%	78 - 122	5110311	10/31/05 10:10
Xylenes, total	150	172		ug/L	115%	81 - 124	5110311	10/31/05 10:10
Surrogate: 1,2-Dichloroethane-d4	30.0	28.7			96%	70 - 130	5110311	10/31/05 10:10
Surrogate: Dibromoformmethane	30.0	31.4			105%	79 - 122	5110311	10/31/05 10:10
Surrogate: Toluene-d8	30.0	32.2			107%	78 - 121	5110311	10/31/05 10:10
Surrogate: 4-Bromofluorobenzene	30.0	31.6			105%	78 - 126	5110311	10/31/05 10:10
<b>5110483-BS1</b>								
Tert-Amyl Methyl Ether	50.0	34.1		ug/L	68%	68 - 134	5110483	11/03/05 12:57
Benzene	50.0	48.0		ug/L	96%	79 - 123	5110483	11/03/05 12:57
Ethyl tert-Butyl Ether	50.0	36.8		ug/L	74%	67 - 140	5110483	11/03/05 12:57
Ethylbenzene	50.0	51.0		ug/L	102%	80 - 124	5110483	11/03/05 12:57
Isopropyl Ether	50.0	46.0		ug/L	92%	73 - 135	5110483	11/03/05 12:57
Methyl tert-Butyl Ether	50.0	39.0		ug/L	78%	69 - 136	5110483	11/03/05 12:57
Toluene	50.0	50.0		ug/L	100%	78 - 122	5110483	11/03/05 12:57
Tertiary Butyl Alcohol	500	449		ug/L	90%	42 - 154	5110483	11/03/05 12:57
Xylenes, total	150	157		ug/L	105%	81 - 124	5110483	11/03/05 12:57
Surrogate: 1,2-Dichloroethane-d4	30.0	28.3			94%	70 - 130	5110483	11/03/05 12:57
Surrogate: 1,2-Dichloroethane-d4	30.0	28.3			94%	70 - 130	5110483	11/03/05 12:57
Surrogate: Dibromoformmethane	30.0	30.5			102%	79 - 122	5110483	11/03/05 12:57
Surrogate: Dibromoformmethane	30.0	30.5			102%	79 - 122	5110483	11/03/05 12:57
Surrogate: Toluene-d8	30.0	32.3			108%	78 - 121	5110483	11/03/05 12:57
Surrogate: Toluene-d8	30.0	32.3			108%	78 - 121	5110483	11/03/05 12:57
Surrogate: 4-Bromofluorobenzene	30.0	32.3			108%	78 - 126	5110483	11/03/05 12:57
Surrogate: 4-Bromofluorobenzene	30.0	32.3			108%	78 - 126	5110483	11/03/05 12:57
<b>5110483-BS2</b>								
Tert-Amyl Methyl Ether	50.0	34.4		ug/L	69%	68 - 134	5110483	11/04/05 01:43
Benzene	50.0	45.1		ug/L	90%	79 - 123	5110483	11/04/05 01:43
Ethyl tert-Butyl Ether	50.0	36.3		ug/L	73%	67 - 140	5110483	11/04/05 01:43
Ethylbenzene	50.0	48.4		ug/L	97%	80 - 124	5110483	11/04/05 01:43
Isopropyl Ether	50.0	43.4		ug/L	87%	73 - 135	5110483	11/04/05 01:43
Methyl tert-Butyl Ether	50.0	37.2		ug/L	74%	69 - 136	5110483	11/04/05 01:43
Toluene	50.0	47.4		ug/L	95%	78 - 122	5110483	11/04/05 01:43
Tertiary Butyl Alcohol	500	418		ug/L	84%	42 - 154	5110483	11/04/05 01:43
Xylenes, total	150	146		ug/L	97%	81 - 124	5110483	11/04/05 01:43
Surrogate: 1,2-Dichloroethane-d4	30.0	26.8			89%	70 - 130	5110483	11/04/05 01:43
Surrogate: 1,2-Dichloroethane-d4	30.0	26.8			89%	70 - 130	5110483	11/04/05 01:43
Surrogate: Dibromoformmethane	30.0	29.7			99%	79 - 122	5110483	11/04/05 01:43
Surrogate: Dibromoformmethane	30.0	29.7			99%	79 - 122	5110483	11/04/05 01:43

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

**PROJECT QUALITY CONTROL DATA**  
**LCS - Cont.**

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>								
<b>5110483-BS2</b>								
Surrogate: Toluene-d8	30.0	31.8			106%	78 - 121	5110483	11/04/05 01:43
Surrogate: Toluene-d8	30.0	31.8			106%	78 - 121	5110483	11/04/05 01:43
Surrogate: 4-Bromofluorobenzene	30.0	33.3			111%	78 - 126	5110483	11/04/05 01:43
Surrogate: 4-Bromofluorobenzene	30.0	33.3			111%	78 - 126	5110483	11/04/05 01:43
<b>5110998-BS1</b>								
Tert-Amyl Methyl Ether	50.0	34.7		ug/L	69%	68 - 134	5110998	11/04/05 13:10
Benzene	50.0	50.4		ug/L	101%	79 - 123	5110998	11/04/05 13:10
Ethyl tert-Butyl Ether	50.0	37.7		ug/L	75%	67 - 140	5110998	11/04/05 13:10
Ethylbenzene	50.0	54.7		ug/L	109%	80 - 124	5110998	11/04/05 13:10
Isopropyl Ether	50.0	48.1		ug/L	96%	73 - 135	5110998	11/04/05 13:10
Methyl tert-Butyl Ether	50.0	39.8		ug/L	80%	69 - 136	5110998	11/04/05 13:10
Toluene	50.0	54.2		ug/L	108%	78 - 122	5110998	11/04/05 13:10
Tertiary Butyl Alcohol	500	477		ug/L	95%	42 - 154	5110998	11/04/05 13:10
Xylenes, total	150	169		ug/L	113%	81 - 124	5110998	11/04/05 13:10
Surrogate: 1,2-Dichloroethane-d4	30.0	28.2			94%	70 - 130	5110998	11/04/05 13:10
Surrogate: 1,2-Dichloroethane-d4	30.0	28.2			94%	70 - 130	5110998	11/04/05 13:10
Surrogate: Dibromofluoromethane	30.0	30.4			101%	79 - 122	5110998	11/04/05 13:10
Surrogate: Dibromofluoromethane	30.0	30.4			101%	79 - 122	5110998	11/04/05 13:10
Surrogate: Toluene-d8	30.0	32.1			107%	78 - 121	5110998	11/04/05 13:10
Surrogate: Toluene-d8	30.0	32.1			107%	78 - 121	5110998	11/04/05 13:10
Surrogate: 4-Bromofluorobenzene	30.0	32.4			108%	78 - 126	5110998	11/04/05 13:10
Surrogate: 4-Bromofluorobenzene	30.0	32.4			108%	78 - 126	5110998	11/04/05 13:10
<b>5110998-BS2</b>								
Tert-Amyl Methyl Ether	50.0	39.9		ug/L	80%	68 - 134	5110998	11/05/05 00:30
Benzene	50.0	49.7		ug/L	99%	79 - 123	5110998	11/05/05 00:30
Ethyl tert-Butyl Ether	50.0	41.0		ug/L	82%	67 - 140	5110998	11/05/05 00:30
Ethylbenzene	50.0	53.0		ug/L	106%	80 - 124	5110998	11/05/05 00:30
Isopropyl Ether	50.0	49.1		ug/L	98%	73 - 135	5110998	11/05/05 00:30
Methyl tert-Butyl Ether	50.0	41.1		ug/L	82%	69 - 136	5110998	11/05/05 00:30
Toluene	50.0	52.5		ug/L	105%	78 - 122	5110998	11/05/05 00:30
Tertiary Butyl Alcohol	500	409		ug/L	82%	42 - 154	5110998	11/05/05 00:30
Xylenes, total	150	161		ug/L	107%	81 - 124	5110998	11/05/05 00:30
Surrogate: 1,2-Dichloroethane-d4	30.0	27.8			93%	70 - 130	5110998	11/05/05 00:30
Surrogate: 1,2-Dichloroethane-d4	30.0	27.8			93%	70 - 130	5110998	11/05/05 00:30
Surrogate: Dibromofluoromethane	30.0	30.4			101%	79 - 122	5110998	11/05/05 00:30
Surrogate: Dibromofluoromethane	30.0	30.4			101%	79 - 122	5110998	11/05/05 00:30
Surrogate: Toluene-d8	30.0	32.4			108%	78 - 121	5110998	11/05/05 00:30
Surrogate: Toluene-d8	30.0	32.4			108%	78 - 121	5110998	11/05/05 00:30
Surrogate: 4-Bromofluorobenzene	30.0	33.3			111%	78 - 126	5110998	11/05/05 00:30
Surrogate: 4-Bromofluorobenzene	30.0	33.3			111%	78 - 126	5110998	11/05/05 00:30

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

**PROJECT QUALITY CONTROL DATA**  
**LCS - Cont.**

Analyte	Known Val.	Analyzed Val	Q	Units	% Rec.	Target Range	Batch	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>								
<b>5110999-BS1</b>								
Tert-Amyl Methyl Ether	50.0	37.6		ug/L	75%	68 - 134	5110999	11/07/05 15:50
Ethyl tert-Butyl Ether	50.0	45.8		ug/L	92%	67 - 140	5110999	11/07/05 15:50
Isopropyl Ether	50.0	62.2		ug/L	124%	73 - 135	5110999	11/07/05 15:50
Methyl tert-Butyl Ether	50.0	41.6		ug/L	83%	69 - 136	5110999	11/07/05 15:50
Tertiary Butyl Alcohol	500	446		ug/L	89%	42 - 154	5110999	11/07/05 15:50
<i>Surrogate: 1,2-Dichloroethane-d4</i>	30.0	28.5			95%	70 - 130	5110999	11/07/05 15:50
<i>Surrogate: Dibromoformmethane</i>	30.0	33.4			111%	79 - 122	5110999	11/07/05 15:50
<i>Surrogate: Toluene-d8</i>	30.0	30.4			101%	78 - 121	5110999	11/07/05 15:50
<i>Surrogate: 4-Bromofluorobenzene</i>	30.0	27.8			93%	78 - 126	5110999	11/07/05 15:50
<b>Extractable Petroleum Hydrocarbons</b>								
<b>5104565-BS1</b>								
Diesel range organics	1000	797	MNR1	ug/L	80%	49 - 118	5104565	10/31/05 20:26
<i>Surrogate: o-Terphenyl</i>	20.0	15.4			77%	55 - 150	5104565	10/31/05 20:26
<b>Purgeable Petroleum Hydrocarbons</b>								
<b>5110537-BS1</b>								
GRO (C4-C12)	1000	794		ug/L	79%	66 - 132	5110537	11/04/05 07:26
<i>Surrogate: a,a,a-Trifluorotoluene</i>	30.0	34.9			116%	63 - 134	5110537	11/04/05 07:26

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA Matrix Spike

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>										
<b>5110483-MS1</b>										
Tert-Amyl Methyl Ether										
Benzene	1.16	52.5		ug/L	50.0	73%	54 - 146	5110483	NOJ3097-03	11/03/05 23:45
Ethyl tert-Butyl Ether		39.6		ug/L	50.0	79%	57 - 148	5110483	NOJ3097-03	11/03/05 23:45
Ethylbenzene	2.91	62.6		ug/L	50.0	119%	72 - 139	5110483	NOJ3097-03	11/03/05 23:45
Isopropyl Ether		47.8		ug/L	50.0	96%	67 - 143	5110483	NOJ3097-03	11/03/05 23:45
Methyl tert-Butyl Ether	1.00E9	322	MHA	ug/L	50.0	000000000	55 - 152	5110483	NOJ3097-03	11/03/05 23:45
Toluene		53.6		ug/L	50.0	107%	73 - 133	5110483	NOJ3097-03	11/03/05 23:45
Tertiary Butyl Alcohol	50.4	482		ug/L	500	86%	19 - 183	5110483	NOJ3097-03	11/03/05 23:45
Xylenes, total	5.52	167		ug/L	150	108%	70 - 143	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: 1,2-Dichloroethane-d4		27.1		ug/L	30.0	90%	70 - 130	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: 1,2-Dichloroethane-d4		27.1		ug/L	30.0	90%	70 - 130	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: Dibromofluoromethane		29.6		ug/L	30.0	99%	79 - 122	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: Dibromofluoromethane		29.6		ug/L	30.0	99%	79 - 122	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: Toluene-d8		31.7		ug/L	30.0	106%	78 - 121	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: Toluene-d8		31.7		ug/L	30.0	106%	78 - 121	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: 4-Bromofluorobenzene		33.5		ug/L	30.0	112%	78 - 126	5110483	NOJ3097-03	11/03/05 23:45
Surrogate: 4-Bromofluorobenzene		33.5		ug/L	30.0	112%	78 - 126	5110483	NOJ3097-03	11/03/05 23:45
<b>5110483-MS2</b>										
Tert-Amyl Methyl Ether		31.8		ug/L	50.0	64%	54 - 146	5110483	NOJ3109-02	11/04/05 11:04
Benzene		51.0		ug/L	50.0	102%	71 - 137	5110483	NOJ3109-02	11/04/05 11:04
Ethyl tert-Butyl Ether		34.7		ug/L	50.0	69%	57 - 148	5110483	NOJ3109-02	11/04/05 11:04
Ethylbenzene		54.8		ug/L	50.0	110%	72 - 139	5110483	NOJ3109-02	11/04/05 11:04
Isopropyl Ether		46.6		ug/L	50.0	93%	67 - 143	5110483	NOJ3109-02	11/04/05 11:04
Methyl tert-Butyl Ether		37.0		ug/L	50.0	74%	55 - 152	5110483	NOJ3109-02	11/04/05 11:04
Toluene		53.2		ug/L	50.0	106%	73 - 133	5110483	NOJ3109-02	11/04/05 11:04
Tertiary Butyl Alcohol		383		ug/L	500	77%	19 - 183	5110483	NOJ3109-02	11/04/05 11:04
Xylenes, total		166		ug/L	150	111%	70 - 143	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: 1,2-Dichloroethane-d4		28.5		ug/L	30.0	95%	70 - 130	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: 1,2-Dichloroethane-d4		28.5		ug/L	30.0	95%	70 - 130	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: Dibromofluoromethane		30.6		ug/L	30.0	102%	79 - 122	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: Dibromofluoromethane		30.6		ug/L	30.0	102%	79 - 122	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: Toluene-d8		32.1		ug/L	30.0	107%	78 - 121	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: Toluene-d8		32.1		ug/L	30.0	107%	78 - 121	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: 4-Bromofluorobenzene		32.5		ug/L	30.0	108%	78 - 126	5110483	NOJ3109-02	11/04/05 11:04
Surrogate: 4-Bromofluorobenzene		32.5		ug/L	30.0	108%	78 - 126	5110483	NOJ3109-02	11/04/05 11:04

**5110998-MS1**

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

**PROJECT QUALITY CONTROL DATA**  
**Matrix Spike - Cont.**

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>										
<b>5110998-MS1</b>										
Tert-Amyl Methyl Ether	0.420	33.8		ug/L	50.0	67%	54 - 146	5110998	NOJ3106-03	11/04/05 22:32
Benzene		48.5		ug/L	50.0	97%	71 - 137	5110998	NOJ3106-03	11/04/05 22:32
Ethyl tert-Butyl Ether		36.5		ug/L	50.0	73%	57 - 148	5110998	NOJ3106-03	11/04/05 22:32
Ethylbenzene		59.6		ug/L	50.0	119%	72 - 139	5110998	NOJ3106-03	11/04/05 22:32
Isopropyl Ether		45.7		ug/L	50.0	91%	67 - 143	5110998	NOJ3106-03	11/04/05 22:32
Methyl tert-Butyl Ether		39.3		ug/L	50.0	79%	55 - 152	5110998	NOJ3106-03	11/04/05 22:32
Toluene	1.53	54.1		ug/L	50.0	105%	73 - 133	5110998	NOJ3106-03	11/04/05 22:32
Tertiary Butyl Alcohol		469		ug/L	500	94%	19 - 183	5110998	NOJ3106-03	11/04/05 22:32
Xylenes, total	0.790	162		ug/L	150	107%	70 - 143	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: 1,2-Dichloroethane-d4		28.2		ug/L	30.0	94%	70 - 130	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: 1,2-Dichloroethane-d4		28.2		ug/L	30.0	94%	70 - 130	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: Dibromoformmethane		30.3		ug/L	30.0	101%	79 - 122	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: Dibromoformmethane		30.3		ug/L	30.0	101%	79 - 122	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: Toluene-d8		32.5		ug/L	30.0	108%	78 - 121	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: Toluene-d8		32.5		ug/L	30.0	108%	78 - 121	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: 4-Bromofluorobenzene		33.4		ug/L	30.0	111%	78 - 126	5110998	NOJ3106-03	11/04/05 22:32
Surrogate: 4-Bromofluorobenzene		33.4		ug/L	30.0	111%	78 - 126	5110998	NOJ3106-03	11/04/05 22:32
<b>5110998-MS2</b>										
Tert-Amyl Methyl Ether		42.1		ug/L	50.0	84%	54 - 146	5110998	NOJ3111-06	11/05/05 06:53
Benzene		81.8	M7	ug/L	50.0	164%	71 - 137	5110998	NOJ3111-06	11/05/05 06:53
Ethyl tert-Butyl Ether		40.9		ug/L	50.0	82%	57 - 148	5110998	NOJ3111-06	11/05/05 06:53
Ethylbenzene		60.0		ug/L	50.0	120%	72 - 139	5110998	NOJ3111-06	11/05/05 06:53
Isopropyl Ether		43.5		ug/L	50.0	87%	67 - 143	5110998	NOJ3111-06	11/05/05 06:53
Methyl tert-Butyl Ether	43.1	1010	A-01,	ug/L	50.0	1930%	55 - 152	5110998	NOJ3111-06	11/05/05 06:53
Toluene		52.0		ug/L	50.0	104%	73 - 133	5110998	NOJ3111-06	11/05/05 06:53
Tertiary Butyl Alcohol	4.53	730		ug/L	500	145%	19 - 183	5110998	NOJ3111-06	11/05/05 06:53
Xylenes, total		169		ug/L	150	113%	70 - 143	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: 1,2-Dichloroethane-d4		27.0		ug/L	30.0	90%	70 - 130	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: 1,2-Dichloroethane-d4		27.0		ug/L	30.0	90%	70 - 130	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: Dibromoformmethane		28.6		ug/L	30.0	95%	79 - 122	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: Dibromoformmethane		28.6		ug/L	30.0	95%	79 - 122	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: Toluene-d8		31.1		ug/L	30.0	104%	78 - 121	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: Toluene-d8		31.1		ug/L	30.0	104%	78 - 121	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: 4-Bromofluorobenzene		35.2		ug/L	30.0	117%	78 - 126	5110998	NOJ3111-06	11/05/05 06:53
Surrogate: 4-Bromofluorobenzene		35.2		ug/L	30.0	117%	78 - 126	5110998	NOJ3111-06	11/05/05 06:53

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA Matrix Spike - Cont.

Analyte	Orig. Val.	MS Val	Q	Units	Spike Conc	% Rec.	Target Range	Batch	Sample Spiked	Analyzed Date/Time
<b>Purgeable Petroleum Hydrocarbons</b>										
<b>5110537-MS1</b>										
GRO (C4-C12)	106	623		ug/L	1000	52%	48 - 138	5110537	NOJ3101-01	11/04/05 06:16
Surrogate: <i>a,a,a-Trifluorotoluene</i>		35.0		ug/L	30.0	117%	63 - 134	5110537	NOJ3101-01	11/04/05 06:16

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA

### Matrix Spike Dup

Analyte	Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>											
<b>5110483-MSD1</b>											
Tert-Amyl Methyl Ether											
Benzene	1.16	51.6		ug/L	50.0	78%	54 - 146	6	24	5110483	NOJ3097-03 11/04/05 00:14
Ethyl tert-Butyl Ether		38.4		ug/L	50.0	101%	71 - 137	2	23	5110483	NOJ3097-03 11/04/05 00:14
Ethylbenzene	2.91	56.4		ug/L	50.0	77%	57 - 148	3	22	5110483	NOJ3097-03 11/04/05 00:14
Isopropyl Ether		46.4		ug/L	50.0	93%	67 - 143	3	22	5110483	NOJ3097-03 11/04/05 00:14
Methyl tert-Butyl Ether	1.00E9	324	MHA	ug/L	50.0	1000000000%	55 - 152	0.6	27	5110483	NOJ3097-03 11/04/05 00:14
Toluene		52.1		ug/L	50.0	104%	73 - 133	3	25	5110483	NOJ3097-03 11/04/05 00:14
Tertiary Butyl Alcohol	50.4	429		ug/L	500	76%	19 - 183	12	39	5110483	NOJ3097-03 11/04/05 00:14
Xylenes, total	5.52	162		ug/L	150	104%	70 - 143	3	25	5110483	NOJ3097-03 11/04/05 00:14
Surrogate: 1,2-Dichloroethane-d4		27.2		ug/L	30.0	91%	70 - 130			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: 1,2-Dichloroethane-d4		27.2		ug/L	30.0	91%	70 - 130			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: Dibromoformmethane		29.9		ug/L	30.0	100%	79 - 122			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: Dibromoformmethane		29.9		ug/L	30.0	100%	79 - 122			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: Toluene-d8		31.4		ug/L	30.0	105%	78 - 121			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: Toluene-d8		31.4		ug/L	30.0	105%	78 - 121			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: 4-Bromofluorobenzene		33.7		ug/L	30.0	112%	78 - 126			5110483	NOJ3097-03 11/04/05 00:14
Surrogate: 4-Bromofluorobenzene		33.7		ug/L	30.0	112%	78 - 126			5110483	NOJ3097-03 11/04/05 00:14
<b>5110483-MSD2</b>											
Tert-Amyl Methyl Ether		32.6		ug/L	50.0	65%	54 - 146	2	24	5110483	NOJ3109-02 11/04/05 11:33
Benzene		50.7		ug/L	50.0	101%	71 - 137	0.6	23	5110483	NOJ3109-02 11/04/05 11:33
Ethyl tert-Butyl Ether		35.9		ug/L	50.0	72%	57 - 148	3	22	5110483	NOJ3109-02 11/04/05 11:33
Ethylbenzene		54.3		ug/L	50.0	109%	72 - 139	0.9	23	5110483	NOJ3109-02 11/04/05 11:33
Isopropyl Ether		46.4		ug/L	50.0	93%	67 - 143	0.4	22	5110483	NOJ3109-02 11/04/05 11:33
Methyl tert-Butyl Ether		37.6		ug/L	50.0	75%	55 - 152	2	27	5110483	NOJ3109-02 11/04/05 11:33
Toluene		54.2		ug/L	50.0	108%	73 - 133	2	25	5110483	NOJ3109-02 11/04/05 11:33
Tertiary Butyl Alcohol		404		ug/L	500	81%	19 - 183	5	39	5110483	NOJ3109-02 11/04/05 11:33
Xylenes, total		167		ug/L	150	111%	70 - 143	0.6	25	5110483	NOJ3109-02 11/04/05 11:33
Surrogate: 1,2-Dichloroethane-d4		28.1		ug/L	30.0	94%	70 - 130			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: 1,2-Dichloroethane-d4		28.1		ug/L	30.0	94%	70 - 130			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: Dibromoformmethane		30.5		ug/L	30.0	102%	79 - 122			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: Dibromoformmethane		30.5		ug/L	30.0	102%	79 - 122			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: Toluene-d8		32.9		ug/L	30.0	110%	78 - 121			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: Toluene-d8		32.9		ug/L	30.0	110%	78 - 121			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: 4-Bromofluorobenzene		32.2		ug/L	30.0	107%	78 - 126			5110483	NOJ3109-02 11/04/05 11:33
Surrogate: 4-Bromofluorobenzene		32.2		ug/L	30.0	107%	78 - 126			5110483	NOJ3109-02 11/04/05 11:33
<b>5110998-MSD1</b>											
Tert-Amyl Methyl Ether	0.420	34.6	R2	ug/L	50.0	68%	54 - 146	2	24	5110998	NOJ3106-03 11/04/05 23:01
Benzene		49.2		ug/L	50.0	98%	71 - 137	1	23	5110998	NOJ3106-03 11/04/05 23:01
Ethyl tert-Butyl Ether		36.6		ug/L	50.0	73%	57 - 148	0.3	22	5110998	NOJ3106-03 11/04/05 23:01
Ethylbenzene		55.3		ug/L	50.0	111%	72 - 139	7	23	5110998	NOJ3106-03 11/04/05 23:01

Client ERI Lake Forest (10203)  
 20372 North Sea Circle  
 Lake Forest, CA 92630  
 Attn George Salley

Work Order: NOJ3097  
 Project Name: Exxon 18-MLJ PO:4506125986  
 Project Number: ERI 3163 13  
 Received: 10/28/05 07:40

## PROJECT QUALITY CONTROL DATA

### Matrix Spike Dup - Cont.

Analyte	Orig. Val.	Duplicate	Q	Units	Spike Conc	% Rec.	Target Range	RPD Limit	Batch	Sample Duplicated	Analyzed Date/Time
<b>Oxygenates by EPA 8260B</b>											
<b>5110998-MSD1</b>											
Isopropyl Ether											
Methyl tert-Butyl Ether				ug/L	50.0	91%	67 - 143	0.7	22	5110998	NOJ3106-03
Toluene	1.53			ug/L	50.0	76%	55 - 152	3	27	5110998	NOJ3106-03
Tertiary Butyl Alcohol				ug/L	50.0	106%	73 - 133	0.7	25	5110998	NOJ3106-03
Xylenes, total	0.790			ug/L	500	88%	19 - 183	7	39	5110998	NOJ3106-03
<i>Surrogate: 1,2-Dichloroethane-d4</i>				ug/L	150	107%	70 - 143	0	25	5110998	NOJ3106-03
<i>Surrogate: 1,2-Dichloroethane-d4</i>				ug/L	30.0	93%	70 - 130			5110998	NOJ3106-03
<i>Surrogate: Dibromofluoromethane</i>				ug/L	30.0	101%	79 - 122			5110998	NOJ3106-03
<i>Surrogate: Dibromofluoromethane</i>				ug/L	30.0	101%	79 - 122			5110998	NOJ3106-03
<i>Surrogate: Toluene-d8</i>				ug/L	30.0	108%	78 - 121			5110998	NOJ3106-03
<i>Surrogate: Toluene-d8</i>				ug/L	30.0	108%	78 - 121			5110998	NOJ3106-03
<i>Surrogate: 4-Bromofluorobenzene</i>				ug/L	30.0	110%	78 - 126			5110998	NOJ3106-03
<i>Surrogate: 4-Bromofluorobenzene</i>				ug/L	30.0	110%	78 - 126			5110998	NOJ3106-03
<b>5110998-MSD2</b>											
Tert-Amyl Methyl Ether											
Benzene				ug/L	50.0	83%	54 - 146	1	24	5110998	NOJ3111-06
Ethyl tert-Butyl Ether				ug/L	50.0	106%	71 - 137	43	23	5110998	NOJ3111-06
Ethylbenzene				ug/L	50.0	84%	57 - 148	2	22	5110998	NOJ3111-06
Isopropyl Ether				ug/L	50.0	107%	72 - 139	11	23	5110998	NOJ3111-06
Methyl tert-Butyl Ether	43.1	155	MHA,	ug/L	50.0	224%	55 - 152	147	27	5110998	NOJ3111-06
Toluene				ug/L	50.0	105%	73 - 133	1	25	5110998	NOJ3111-06
Tertiary Butyl Alcohol	4.53			ug/L	500	114%	19 - 183	24	39	5110998	NOJ3111-06
Xylenes, total				ug/L	150	106%	70 - 143	6	25	5110998	NOJ3111-06
<i>Surrogate: 1,2-Dichloroethane-d4</i>				ug/L	30.0	92%	70 - 130			5110998	NOJ3111-06
<i>Surrogate: 1,2-Dichloroethane-d4</i>				ug/L	30.0	92%	70 - 130			5110998	NOJ3111-06
<i>Surrogate: Dibromofluoromethane</i>				ug/L	30.0	99%	79 - 122			5110998	NOJ3111-06
<i>Surrogate: Dibromofluoromethane</i>				ug/L	30.0	99%	79 - 122			5110998	NOJ3111-06
<i>Surrogate: Toluene-d8</i>				ug/L	30.0	108%	78 - 121			5110998	NOJ3111-06
<i>Surrogate: Toluene-d8</i>				ug/L	30.0	108%	78 - 121			5110998	NOJ3111-06
<i>Surrogate: 4-Bromofluorobenzene</i>				ug/L	30.0	117%	78 - 126			5110998	NOJ3111-06
<i>Surrogate: 4-Bromofluorobenzene</i>				ug/L	30.0	117%	78 - 126			5110998	NOJ3111-06
<b>Purgeable Petroleum Hydrocarbons</b>											
<b>5110537-MSD1</b>											
GRO (C4-C12)	106			ug/L	1000	56%	48 - 138	7	36	5110537	NOJ3101-01
<i>Surrogate: a,a,a-Trifluorotoluene</i>				ug/L	30.0	117%	63 - 134			5110537	NOJ3101-01
											11/04/05 06:51

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## CERTIFICATION SUMMARY

### TestAmerica Analytical - Nashville

Method	Matrix	AIHA	Nelac	California
CA LUFT	Water	N/A	X	X
NA	Water			
SW846 8260B	Water	N/A	X	X

Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## NELAC CERTIFICATION SUMMARY

TestAmerica Analytical - Nashville does not hold NELAC certifications for the following analytes included in this report

Method

Matrix

Analyte

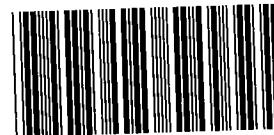
Client ERI Lake Forest (10203)  
20372 North Sea Circle  
Lake Forest, CA 92630  
Attn George Salley

Work Order: NOJ3097  
Project Name: Exxon 18-MLJ PO:4506125986  
Project Number: ERI 3163 13  
Received: 10/28/05 07:40

## DATA QUALIFIERS AND DEFINITIONS

- A-01** MTBE elevated in MS due to carryover from previous sample
- J** Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- M7** The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
- MHA** Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
- MNR1** There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike.
- QSG** Silica Gel clean-up performed on extracts.
- R2** The RPD exceeded the acceptance limit.

## METHOD MODIFICATION NOTES

**COOLER RECEIPT FORM**

BC#

NOJ3097

Client Name : ERICooler Received/Opened On: 10/28/05 Accessioned By: James D. Jacobs  
Log-in Personnel Signature

1. Temperature of Cooler when triaged: -0.2 Degrees Celsius
2. Were custody seals on outside of cooler?.....  YES... NO... NA  
a. If yes, how many and where: 1 Front
3. Were custody seals on containers?.....  NO... YES... NA
4. Were the seals intact, signed, and dated correctly?.....  YES... NO... NA
5. Were custody papers inside cooler?.....  YES... NO... NA
6. Were custody papers properly filled out (ink, signed, etc)?.....  YES... NO... NA
7. Did you sign the custody papers in the appropriate place?.....  YES... NO... NA
8. What kind of packing material used? Bubblewrap      Peanuts      Vermiculite      Foam Insert  
Ziplock baggies      Paper      Other      None
9. Cooling process: Ice      Ice-pack      Ice (direct contact)      Dry ice      Other      None
10. Did all containers arrive in good condition ( unbroken)?.....  YES... NO... NA
11. Were all container labels complete (#, date, signed, pres., etc)?.....  YES... NO... NA
12. Did all container labels and tags agree with custody papers?.....  YES... NO... NA
13. Were correct containers used for the analysis requested?.....  YES... NO... NA
14. a. Were VOA vials received?.....  YES... NO... NA  
b. Was there any observable head space present in any VOA vial?.....  NO... YES... NA
15. Was sufficient amount of sample sent in each container?.....  YES... NO... NA
16. Were correct preservatives used?.....  YES... NO... NA

If not, record standard ID of preservative used here \_\_\_\_\_

17. Was residual chlorine present?.....  NO... YES... NA
18. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below:

3061 Fed-Ex

UPS

Velocity

DHL

Route

Off-street

Misc.

19. If a Non-Conformance exists, see attached or comments below:

BIS = Broken in shipment  
Cooler Receipt Form

LF-1  
End of Form

Revised 4/5/05

G /abuled



**Nashville Division  
2960 Foster Creighton  
Nashville, TN 37204**

**Phone:** 615-726-1777  
**Toll Free:** 800-762-8080  
**Fax:** 615-726-3404

**Consultant Name:** Environmental Resolutions, Inc.

**Address:** 20372 North Sea Circle

**City/State/Zip:** Lake Forest, CA 92630

**ExxonMobil Territory Mgr: Marla Guensler**

**Consultant Project Mgr: GEORGE SALLEY**

**Consultant Telephone Number:** 949-457-8950

Fax No.: 949-457-8956

**Sampler Name: (Print)**

**Sampler Signature:**

NOJ3097

11/04/05 17:00

**ExxonMobil**

Laff

TA Account #: 10203  
Invoice To: Maria Guensler  
Report To: GEORGE SALLEY  
PO #: 4506125986  
Facility ID #: ERI 3163 13 / EXXONMOBIL 18MLJ  
Site Address 5005 NORTH LONG BEACH  
City, State, Zip LONG BEACH, CA  
County District (CA) LARWQCB

**Comments/Special Instructions:** \*OXYGENATES WHEN REQUESTED ABOVE TO INCLUDE; BTEX, MTBE,  
DIPE, ETBE, TAME, TBA.

**Laboratory Comments**

Temperature Upon Receipt: -0.2°C  
Sample Containers Intact?  N  
VOCs Free of Headspace?  N

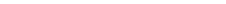
**CONSULTANT ID # ERL  
GLOBAL ID # T0603701794**

"PLEASE E-MAIL ALL EDF FILES TO  
RSHEARER@ERI-US.COM

~~Relinquished by~~

**KSHAKER@ERI-US.COM**

**Belinquisched by:**

Date	Time	Received by (Lab personnel)	Date	Time
10/27/05	6:00		10/28/05	7:40

## **5 DAY TURN-AROUND FOR EXXONMOBIL REQUIRED**

**Site Specific-if yes, please pre-schedule w/ TestAmerica  
Project Manager or attach specific instructions**

PURGING AND SAMPLING RECORD - FIELD LOG										
CLIENT NAME: EXXONMOBIL 18MLJ			ERI JOB # 3163 13			0.163 FOR A 2" WELL				
SITE LOCATION: 5005 N. LONG BEACH BLVD			ANALYSIS: TPHg/8260B			0.652 FOR A 4" WELL				
FIELD CREW: ER Cr DATE: 10/26/05			TPHd			1.167 FOR A 6" WELL				
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE DIA	CASE VOL(gal)	PRG VOL	COND.	TEMP	pH	
MW7	8:10 AM	27.89	48.36	4	13.36	39				
	8:30 AM					1	2.50	74.9	7.52	
	8:36 AM					13	2.48	74.8	7.50	
	8:42 AM					26	2.47	74.6	7.48	
	8:49 AM					39	2.45	74.7	7.47	
SW	11:00 AM	28.82								
COMMENTS	Water Clear									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE DIA	CASE VOL	PRG VOL	COND.	TEMP	pH	
MW1	8:13 AM	28.19	49.56	4	13.95	42				
	8:32 AM					1	2.51	74.2	7.85	
	8:39 AM					14	2.50	74.4	7.83	
	8:46 AM					28	2.48	74.6	7.82	
	8:54 AM					42	2.47	74.1	7.81	
SW	11:05 AM	29.24								
COMMENTS	Water Clear									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE DIA	CASE VOL	PRG VOL	COND.	TEMP	pH	
MW3	8:16 AM	27.96	49.65	4	14.1582	42				
	9:10 AM					1	3.11	74.6	7.71	
	9:17 AM					14	3.12	74.5	7.69	
	9:24 AM					28	3.10	74.2	7.68	
	9:32 AM					42	3.09	74.0	7.66	
SW	11:10 AM	28.86								
COMMENTS	Water Cloudy									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE DIA	CASE VOL	PRG VOL	COND.	TEMP	pH	
MW5				4	0.00					
SW										
COMMENTS	OVERPURGE WELL FOR 5 HRS. City Has t/c In Street UnableTo SetUp OverPurge									

PURGING AND SAMPLING RECORD - FIELD LOG										
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FIELD CREW: ER <i>[Signature]</i>			DATE: 10/26/05			TPHd				
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	DIA	VOL	PRG	COND.	TEMP	pH	
MW4				4	0.00					
SW										
COMMENTS	OVERPURGE WELL FOR 5 HRS. City Has t/c In Street UnableTo SetUp OverPurge									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE	CASE	PRG				
MW6	8:19 AM	26.54	48.39	4	14.26	42				
	9:12 AM					1	2.25	75.2	7.35	
	9:19 AM					14	2.26	74.9	7.32	
	9:26 AM					28	2.22	74.8	7.33	
	9:34 AM					42	2.20	74.5	7.31	
SW	11:15 AM	27.65								
COMMENTS	Water Cloudy									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE	CASE	PRG				
MW2	8:22 AM	26.74	50.75	4	15.67	48				
	9:45 AM					1	2.50	74.0	7.15	
	9:54 AM					16	2.49	73.9	7.12	
	10:03 AM					32	2.47	73.8	7.10	
	10:12 AM					48	2.46	73.6	7.08	
SW	11:20 AM	27.56								
COMMENTS	Water Clear									
WELL #	TIME	DEPTH TO WATER	DEPTH TO WELL	CASE	CASE	PRG				
				4	0					
SW										
COMMENTS:										

SCR-5  
WELL SAMPLING & SURVEYING  
Rev 6/05

## WELL SAMPLING AND SURVEYING

- 1) Open well heads. This may require a socket or a special Allen wrench.
- 2) If the wells are not surveyed by a licensed land surveyor, then survey the wells if this hasn't been done before as follows:
  - a) Select a permanent benchmark (e.g. curb at corner of site, property line). Record on "SURVEYGW" form.
  - b) Measure and record rectangular coordinates from benchmark to each well.
  - c) Set up tripod and transit where it can see all wells and the benchmark = Station "A". If you can't see all wells, two transit locations must be used. At least one well surveyed from Station "A" must be resurveyed from Station "B". Preferably, two or more wells are resurveyed.
  - d) Carefully level the tripod using the bubble indicator.
  - e) Place stadia rod on benchmark and record height from crosshair to reference, ( $D_o$ ).
  - f) Place stadia rod on each well (at the notch) and record ht. from well to crosshair, ( $D_w$ ).
  - g) Calculate casing elevation as shown on data sheet SURVEYGW.

To check the accuracy in leveling the transit, set the transit in second spot and repeat steps 2c through 2g. Recalculation of casing elevations should agree within 0.01 ft. or a third placement of the tripod will be required.

- 3) Set up a decon station. This consists of four (4) buckets. Fill the first with deionized water and one (1) teaspoon (approximately one cap full) of Liquinox soap. Fill the next three (3) buckets with deionized water. To decon a probe or water level indicator, place the element and the tape in the buckets in series, finishing with a good rise. To decon a pump, place the pump, hose and wire leads into the buckets in series, and circulate water through the pump in each bucket. Move the equipment from the dirtiest to cleanest bucket, rinsing thoroughly in each bucket.
- 4) Decon the interface probe or water level indicator before inserting into each well. Review the historical groundwater concentrations and sample from cleanest well to hottest well, deconing between each well. Lower probe/indicator until it beeps - raise and lower and mark the level on the tape with your thumb. Estimate level to the nearest 0.01 ft. Note the depth to free product if present as indicated by the interface probe and the depth to water on your field notes and log. Note any odor when the probe is withdrawn from the well. Look for the notch or ink mark on the top of the well and measure all levels from that. Notch should be on the highest side of the well pipe. If no side is high, notch should be on the north side. Measure from the casing adjacent to the notch - not from the bottom of the notch. If there is no notch - make one. For sites that have free product, or historically have had free product, use a bailer to remove a sample of the top of the water column and measure the product in the bailer or look for a sheen. Take a picture of any bailers with product after labeling the bailer with the well number.
- 5) If there is free product, do not purge or sample. The presence of liquid phase hydrocarbons means the concentration in the water will be high anyway and the pump will be difficult to get clean enough to avoid contaminating other wells.
- 6) Developing: If the well has not been developed (it is new), surge the well by moving bailer up and down vigorously in the well for about 5 minutes. This will wash silt from the sand pack into the well where it can be removed.
- 7) Pull out as much silt as possible by running the bailer all the way to the bottom and withdrawing. Continue bailiing until water is fairly clear or until local regulatory specifications are met. Removal of silt with the bailer will extend the pump life. Contact the Project Manager if water does not clear up by 10 casing volumes.

- 8) Decon pump by washing in TSP/water the rinsing with tap water and rinsing again with deionized water. Then pump clean water through the pump to push out any dirty water.
- 9) **Purging:** Place pump in well about 2 to 5 feet off bottom. Withdraw at least 3 casing volumes from the well, or until temperature, pH and conductivity stabilize (see local regulations). Be careful not to let the pump run dry. If an electric purging pump is used, such as a Grundfos pump, check the water level in the well with the water level indicator and slow pump down when water level is within 2 ft of the pump head. While purging, collect a water sample as often as possible and check for pH, conductivity, and temperature. Stable pH and conductivity would indicate the well has been filled with representative groundwater and purging is complete. If well recharges slowly, remove 1.5 casing volumes. Estimate flow rates by recording the time it takes to fill a 5-gallon bucket (1/2 of a 55-gallon barrel, etc.)
- 10) Decon pump thoroughly between each well by repeating step 7.
- 11) Label bottles with a "Sharpie Pen" when they are dry. Label as W-xx-MWY, where xx is water depth below surface in feet and y is well number (refer to SOP-1).
- 12) After the well has been developed, sample the water using a disposable bailer and surgical gloves to prevent oil from your hands from contaminating the sample. Be sure to leave no headspace or bubbles in any water sample to be tested for volatiles. Wells should be sampled within (24) hours of purging and the well should have recovered to within 80% of its volume before purging. (Slow recharge wells need to be addressed with the Project Manager - and may have to be purged slowly). Gasoline contaminated water requires at least three (3) 40 ml VOA's from each well. Preserve samples by acidifying to pH <2 (usually with two drops of HCl). Water suspected of contamination with oil or diesel requires 2 1-liter samples in amber bottles. Samples contaminated with oil will require 10 drops of H<sub>2</sub>SO<sub>4</sub> for preservation. Samples for organic lead require two (2) 1-liter amber bottles.
- 13) Place like vials in a baggie and label the baggie. Put vials and baggie in an ice chest filled with ice and document samples and analyses required on a chain of custody. Take samples to the laboratory the same day samples are collected if possible, at least within 24 hours.
- 14) Clean wellhead gaskets (seals), put locking caps on the wells and replace the covers. Cover and label the drums (if any) of purge and decon water.

<u>Analysis</u>	<u>Bottles</u>	<u>Preservative</u>
8015 mod gasoline/8020(602)	min. of 3 x 40 ml VOA	2 drops HCl to pH <2
8015 mod diesel/8020(602)	2 1-liter & 3 x 40 ml VOA	2 drops HCl to pH <2 (applied to VOA's)
418.1 (TRPH)	2 1-liter amber	10 drops H <sub>2</sub> SO <sub>4</sub> to pH <2
Organic Lead	2 1-liter amber	no preservative suggested
HOC - 8010 (601)	min. of 3 x 40 ml VOA	no preservative suggested

**Items Needed:**

Water Level Indicator  
 Disposable Bailers  
 Generator  
 Grundfos Pump and Reel  
 Grundfos Pump Control Box  
 Hydac Cond/Temp/pH Meter  
 Liter Bottles  
 VOAs

Distilled Water  
 4 Buckets  
 Bottle Brush  
 TSP Detergent  
 Stainless Steel Cable or Poly Rope  
 Cooler with Ice  
 Socket set and Allen Wrench (CNI Key)  
 Plastic sheeting

**Items Needed for Surveying:**

Topcon AT-F7 Transit  
 Tripod  
 Stadia Rod

SOP-6  
Quarterly Well Monitoring  
Rev. 6/05

QUARTERLY WELL MONITORING

- 1) Give the site manager advance notification of field activities. Arrange for a sufficient number of drums. Obtain a site plan with the location and ID's of the wells to be monitored and a copy of the table from the last quarterly report with the previous groundwater data.
- 2) Open well heads. This may require a socket or a special allen wrench.
- 3) Set up decon station per SOP-5. Measure groundwater depths with water level indicator as per SOP-5 before any other action is taken. If the depth to the bottom of the monitoring well is unknown, reel out the water level indicator until you feel the probe contact the bottom. You may have to raise and lower the probe several times to "feel" contact with the bottom. The probe is not very heavy, and the bottom of the well may have a cushioning layer of silt. Record the depth of the well once you feel confident the probe is at the bottom. Note odors from well.
- 4) Calculate the linear footage of water in each well, by subtracting the depth to water from the total well depth. To obtain the casing volume in gallons, multiply the linear footage by a constant for the given well casing diameter. Typically, three casing volumes are purged from each well prior to sampling. Always Round up - if 3.4 gallons, then purge 4 gallons - if 12.1 gallons, then purge 13 gallons.

Casing diameter	Gallons per linear foot
2"	0.17
4"	0.66
6"	1.50
8"	2.60

- 5) After measuring all water levels, begin purging the wells in order of the cleanest to the most contaminated based on last quarter's data. Well purging procedures are outlined in SOP-5. While wells containing free floating product may not be sampled, the project manager may want the free product removed manually by bailer. Check with the project manager before bailing LPH. You may find that for shallow wells, it may be quicker to bail manually rather than set up the pump. Place purge and decon water in a 55-gallon drum or treat on site. Do not mix purge water from different wells in one drum. Record all purge data on Groundwater Sampling Field Logs. Record "LPH" and the thickness in feet and inches (to nearest 1/16 of an inch) in the comments section if a measurable level of LPH present. If non-measurable amount present then record "Sheen" in the comments section.
- 6) When the well has recovered at least 80% of its' original water level, collect samples using a clean, new disposable bailer. Use a new disposable bailer for each well. Make sure the rope or line is tied securely on the bailer, you don't want to go fishing. Sample in order of the cleanest to the most contaminated. If required, collect field (equipment) blanks.
- 7) Trip blanks are a QA/QC procedure that must be collected at every site. Obtain a trip blank from the laboratory. They will make them up for you. The trip blank to taken unopened to the site and is kept with the other samples in the cooler unopened during the day's sampling. Label the bottle as an arbitrary monitoring well. For example: if there are 5 monitoring wells to be sampled at the site, the trip blank should be labeled as if it were a sample from MW6. The trip blank is never opened and it is used to determine if any contaminants are introduced by the laboratory or during transportation of the samples.
- 8) Field (equipment) blanks are a QA/QC procedure to be collected at the project manager's discretion (or always for LACDPW sites). To collect a field blank decon a bailer thoroughly; pour distilled water into the bailer; pour the distilled water from the bailer into appropriate sample bottle(s) for the analysis

- to be performed, allow for no headspace; label the bottle as an arbitrary monitoring well. For example: if there are 5 monitoring wells to be sampled at the site plus a trip blank, and a field blank is collected, the field blank should be labeled as if it were a sample from MW7 (the trip blank is MW6). If a disposable bailer is used for sampling, use a new disposable bailer to collect the field blank.
- 9) Label sample containers when they are dry (refer to SOP-1). Place vials from each well in a separate plastic zip lock bag. Put bag in an ice chest and document samples and analyses required on a chain of custody (see attached examples).
  - 10) Replace the locking caps, and the covers. Cover and label the drums of waste water. Place the drums on site in a location selected by the site manager. Usually, this will be near a dumpster or in the back, away from public view. Labels should face outward.
  - 11) Decon all equipment per SOP-5 before leaving the site.

In general, groundwater sampling will be performed in accordance with LUFT guidelines. Several local agencies require that groundwater sampling occur under slightly different guidelines. Check with the project manager to find out which sites require special groundwater sampling procedures. Typically, the following apply:

#### Orange County Health Care Agency Requirements

No special requirements. Water sampling will be performed as per the State Water Resources Board's LUFT manual.

#### LARWQCB Groundwater Requirements

- o Purge a minimum of three well volumes if recovery is fast, or one borehole volume if recovery is slow (water does not recover to 80% of original level within two hours).
- o The last three readings must be within 10% for conductivity, temperature, and pH to show stabilization. This means that all three consecutive readings must be within these limits - the first with the middle, and the first with the last, and the middle with the last. For instance, pH readings of 6.92, 6.95, and 7.00 would be sufficient.
- o Even though there are no guidelines for turbidity, the measurements should be less than 10 NTU, or meet the baseline level established during development, upon completion of purging. Check with project manager if you use the baseline turbidity level.
- o Prior to sampling document recovery time by measuring the water level in each well to prove that at least 80% recovery has occurred.
- o A trip blank must be collected.
- o In the comments column of the chain of custody, write "Prepare laboratory report in WIP format."

#### San Diego Department of Health Services Groundwater Sampling Requirements

- o SDDHS does not encourage purging wells until dry.
- o Purge one borehole volume of water if recovery is fast, collecting pH/temperature/conductivity measurements while purging, then remove an additional one-half borehole volume of water. If the first and second measurements vary by less than 10%, purging is considered adequate. If not, keep purging water in one-half borehole volume increments until the measurements vary by less than 10%,

or three borehole volumes have been removed. Obtain three consecutive pH/temperature/conductivity measurements that are within 10% of each other.

- o If recovery is slow (water does not recover to 80% of original level within two hours) purge only one borehole volume of water.
- o Prior to sampling document recovery time by measuring the water level in each well to prove that at least 80% recovery has occurred.

Ventura County Environmental Health Division  
Groundwater Sampling Requirements

- o A trip blank and a duplicate sample must be analyzed for each site.
- o Custody seals must be place over the cap of each sample.

Under certain conditions the calculated purge volumes will need to be calculated in borehole volumes instead of well casings volumes. Use the following to calculate borehole volume in gallons.

<u>Well I.D.</u>	<u>Bore Volume</u>
2"	0.90 gal/ft. in water
4"/or nested wells	1.70 gal/ft. in water

The completed groundwater sampling log must contain:

- pH/temp./conductivity and turbidity measurements indicating stabilization
- time and volume of water removed at each pH/temp./conductivity measurements
- total volume of water purged
- name of personnel performing sampling
- date and project number
- problems or unusual conditions arising during purging or sampling, such as the well going dry during purging, water in the well vault, missing well caps or locks, odors, appearance of purge water, etc.
- 80% recovery measurement and time of measurement after purging and before sampling

All chains of custody for the client's groundwater sites must contain the consultant work release number, station identification number and client contact among the other items to be filled out. Check the groundwater sampling field log and chain of custody for completeness, accuracy and neatness. If you have any questions, call!!!

Make sure that the date and time of relinquished and accepted at the lab are the same on the chain of custody. Also, make sure the lab fills in the sample condition information and signs for the samples on the chain of custody

Santa Barbara County Environmental Health Services  
Groundwater Monitoring Guidelines

- I. Groundwater Monitoring
  - A. Groundwater levels are to be monitored/measured in **all wells** in a short time span.
  - B. Measure the groundwater levels (correct for "free product" thickness).
  - C. Use a clear bailer to check for the presence of "floating product," sheen, and odors.
  - D. Replace well cover until ready to purge well.
- II. Purgging
  - A. Amount: generally 3 to 5 (no more than 10) well volumes; via bailer, pumps, or vacuum truck.

- B. Parameters (pH, temperature, conductivity) shall stabilize while purging.
  - 1. Measure the parameters of a small volume (i.e., a 500 ml) of the water as it is removed from the well. Measure the parameters initially and at regular volume intervals (e.g., after every well casing volume). More frequent testing may be needed if the well is known to go dry.
  - 2. Wells must be allowed to recharge prior to sampling (see section G of the Santa Barbara County LUFT Manual).
- C. Slow recharging wells are wells that are purged dry before removing 3 well volumes of water, and take more than **two (2)** hours to recharge.
  - 1. Note this on the field records and estimate the number of well volumes removed.
  - 2. Allow the well to recharge a minimum of two (2) feet and then sample.
  - 3. **Sample wells no later than 24 hours after purging.**
  - 4. Note the water level and percentage of recharge in the report.

### III. Sample Collection

- A. Use either a decontaminated Teflon, stainless steel, or disposable bailer.
- B. Sample containers are to be supplied and certified by a laboratory.
  - 1. VOAs of 40 ml volume (at least 3 per well – check with lab and the PM for specific requirements); fill VOAs first to reduce volatilization.
  - 2. 4 oz sample containers for Pb (metallic lead) analysis (if needed).
- C. Fill containers by pouring along the inside of the vial to reduce volatilization.
- D. Form a positive meniscus with the water, to avoid trapping air, before placing the cap on the VOA. **Samples with headspace are not acceptable for analysis.**
  - 1. Check for bubbles by inverting and tapping gently to dislodge bubbles.
  - 2. If bubbles are found, uncap and repeat steps C and D.
- E. Label all samples and store immediately in an ice chest at 4 degrees Celsius filled with ice.
- F. Be careful to properly decontaminate equipment between each and every well.